Published every Saturday by the Simmons-Boardman Publishing Company, 34 North Crystal Street, East Stroudsburg, Pa., with executive offices at 30 Church Street, New York

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The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)

Subscriptions, including 52 regular weekly issues and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free; United States, Mexico and Canada, $6.00. Foreign countries, not including daily editions $8.00.

Subscriptions for the fourth issue each month only (published in two sections, the second of which is the Motor Transport Section) payable in advance and postage free; United States, Mexico and Canada, $1.00; foreign countries, $2.00. Single copies, 25 cents each.

Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name Registered U. S. Patent Office.

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Why modern operation demands improved car-oil

A buggy couldn't travel far at automobile speed without greatly improved lubrication. In the last ten years, the ton-miles per train-hour on American railroads have increased 60%. Trains travel faster, farther, allowing little time for inspection of all journal boxes. Each year larger cars are being put into service.

A high-grade car-oil has become an economic necessity. The cost of one delayed train per week, due to heating failure brought about by poor car-oil, would far more than pay the additional cost of high-grade oil, suitable for modern operation.

The Vacuum Oil Company has anticipated the rail-

Railway Age

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Is There Too Much Competition?

IT is both the desire of railway managements and the policy of the government to maintain a reasonable amount of competition between railways. On the other hand, as shown by the attitude of railway managements toward consolidations, and by the consolidation provisions of the Transportation act, it is neither the desire of railway managements nor the policy of the government to have competition carried to extremes. Excessive competition unnecessarily reduces railway net earnings while doing the public no good. There is excessive competition of various forms at present, and its harmful effects become especially evident when traffic is reduced in a period of depression.

At the recent meeting of the American Railway Association steps were taken to reduce payments for loss and damage of fruits and vegetables. It was shown that while within recent years payments of claims for loss and damage of other kinds of freight have been greatly reduced, the amounts being paid in settlement of claims regarding fruits and vegetables have greatly increased. The facts make it perfectly evident that the increase in payments for loss and damage of fruits and vegetables has been due to competition for traffic. The effects upon railway net earnings of the payment of excessive claims, and the legal consequences for both shippers and railways that might follow if the practice were not stopped, are so very plain that it would be difficult for anyone who does not know the lengths to which railways will go to capture competitive traffic to understand how the practice could ever have been allowed to continue and grow as it has been.

Are There Too Many Passenger Trains?

While passenger traffic has been constantly declining for years, the railways are engaged in fierce competition for through passenger business. Their competition is resulting in the speeding up of trains, in increasing their luxuriousness, and in the operation of an unnecessary number of them. It is difficult to criticize the speeding up of passenger trains as long as due regard is paid to safety. In most parts of the country our passenger train service has not been notably fast in the past, and the public is benefitted by increases in the speed of trains.

The competitive operation of more trains than there is any public demand or need for is an entirely different matter. Such competition usually involves the running of trains by a number of different lines between the same points on the same schedules. The public usually could be better served by co-operation between the railways resulting in the trains on the different lines leaving and arriving at their terminals at different hours; while the railways would make larger net earnings and create a better public sentiment if they would reduce the number of trains running between many points. Travelers who ride upon trains that are half empty naturally get the impression that the railways are wasting money, and are made less disposed to listen to complaints that their inability to earn satisfactory returns is due to the way in which they are regulated. From the standpoint of both the railways and the public, what is needed is the fastest, most comfortable and most convenient service that can be rendered without the operation of an excessive number of trains. This ideal is not being approached at the present time, and the railways are making much greater efforts to surpass each other in speed, luxury and number of trains than they are to provide the public with satisfactory service at a reasonable cost of operation.

Speed and dependability are of great importance in freight service, and the improvements made in freight service within recent years have been of incalculable value to industry and commerce; but reliability in freight service is more important than speed, and it is probable that the competitive speeding up of freight service is being overdone. Increased average speed in the movement of freight secured by reducing the switching of cars and the stopping of trains is one thing. Increased speed secured by actually running trains faster between stops is quite another thing, and both interferes with maximum loading and increases operating expenses in various ways. There is plainly a tendency toward excessive competition in reducing the running time of trains between important centers of industry.

Another way in which competition is being carried to excess is in the use of purchases to influence traffic. The use of purchases to influence traffic may temporarily help a railway to get traffic that otherwise would

move by competing lines; but it is practically impossible for purchases to be used as a competitive weapon by one railway without causing it to be used by other railways, and in the long run the practice must tend to interfere with attaining the greatest practicable economy in operation.

Co-operation Versus Competition

It is generally conceded that both competition and co-operation between railways are desirable. It is impossible to state definitely just when and to what extent co-operation should be adopted to restrict competition. Probably, however, there are few railway officers who would not agree that at present there is too much competition and too little co-operation. Competition which results in improvements of service that are of benefit to the public without resulting in excessive operating costs to the railways is desirable. There are, however, forms of competition for traffic that result in no benefit to the public and in unnecessary operating expenses to the railways. The temptation to resort to such forms of competition is always greatest when the available traffic is smallest, because then every railway has much less traffic than it needs; but it is also precisely at such times that the unnecessary operating expenses resulting from excessive competition have the worst effects upon net operating income.

Each railway fears that the adoption of co-operative measures to reduce competition will result to its disadvantage. Each seems to think it can use competitive measures more successfully and effectively than its rivals, but every competitive move made by one railway in trying to increase its traffic is promptly imitated by its rivals, with the result that usually they all lose by unwise competition. In almost all parts of the country railways are losing by operating more through passenger trains than are needed; and yet their fears of each other make it almost impossible to secure reductions of competitive train service. The savings that could be secured by reducing competition are often exaggerated, but total operating expenses could be substantially reduced by the elimination of all forms of competition that result in no benefits to the public.

The Incredible in the Grade Crossing Situation

WHAT to do to reduce accidents at the railroad-highway grade crossings of the country is one of the most serious and difficult problems facing the railways. This situation is made the more grave by the almost inconceivable oddities presented by the grade crossing.

Incredible as it may seem, a large number of automobile drivers actually do not know what flashlight signals at railroad crossings are for; the cases of motorists running into the sides of trains are increasing; and crossing gates are being demolished as though they were installed for that purpose.

Recently one of the larger eastern railways completed a series of studies of grade-crossing protection which disclosed a number of striking facts. A check was made of 72 crossings, equally divided among those provided with standard A.R.A. flashlight signals, watchmen and gates for protection, and a similar check was made at 51 other crossings safeguarded only by the standard stationary warning sign. The average hourly traffic over these 123 crossings averaged five trains and 250 automobiles per crossing. Analysis showed that the crossings protected by standard flashlight signals, which provided 12.5 per cent of the total number of possibilities of accidents, actually produced 12.6 per cent of the recent accidents, while crossings with all other types of protection, which afforded 49.24 per cent of the exposure to accidents, produced 47.1 per cent of the recent accidents.

During this study 3,545 drivers in 12 different states were questioned concerning their practices at grade crossings. Inconceivable as it may seem in this day of "Stop and Go" lights in nearly every town and village in the country, 52 were found who admitted that they did not know what the flashlight signals at grade crossings were intended for. Included in the report of the Committee on the Protection of Railway Grade Crossings and Highway Intersections of the National Conference on Street and Highway Safety, published in part in the May 10 issue of the *Railway Age*, is the statement that during the last year there were 1,272 cases where automobiles ran into the sides of trains, and that accidents of this nature are on the increase.

Astonishing as these facts may seem, many others equally astonishing could be cited, not the most depressing of which is the experience of a small eastern line which has had an average of 350 crossing gates damaged or broken each year by motorists.

The proper steps to take to correct such conditions, in view of the fact that the elimination of all or even of any considerable part of the 240,000 highway-railway grade crossings in the United States by grade separation is economically impracticable, are as yet not clear. The addition of a stop sign to the standard flashinglight signal, as suggested by the A.R.A. Joint Committee on Highway Crossing Protection at the conference in Washington recently, should eliminate any uncertainty as to the purpose of these signals. Beyond this, the railways of the country cannot now do better than to accept the conclusion of the committees mentioned, that the establishment of uniform warning signs, signals and protective measures, and the continued education of highway travelers to the prudent use of crossings, afford the quickest and surest means of relief yet devised.

Railroad Employees' Need for Vocational Training

THESE are the days of search for methods and devices designed to increase the efficiency of railroad operation. Never before have old methods and old practices been subject to such critical analysis and revolutionary change. The industry needs the added economy and efficiency which modern methods and machinery can give. The search for still better methods and even more economical devices must continue. But is there not yet another possible means of improving railway performance which has received comparatively little attention? We refer to educational activities to teach employees to do their own jobs better and to prepare them for promotion to more responsible positions.

The railroads do, it is true, provide educational facilities for some classes of employees. The apprentice courses for shop work of some of the roads are examples of vocational instruction at its best. But why should such instruction be confined to but a few of the crafts or, for that matter, to only some of the railroads?

There are, to be sure, educational facilities at hand for the benefit of all the more ambitious employees who will seek them out. Such courses, offered by vocational and correspondence schools, are, however, necessarily more expensive where enrollment has to be secured from employees as individuals rather than from large groups under the sponsorship of the railroad companies.

Furthermore, when employees undertake to educate themselves the railroad benefits quite as much as do the employees. It appears to be entirely legitimate, therefore, and probably even advisable for the railroad to do what it can to smooth out the road toward education and possibly share in the expense.

To support formal vocational training for railroad work is not to belittle the value of practical experience. Actual experience is, of course, the great essential. On the other hand, formal training as a supplement to practical experience can do much to speed up the process of education—teaching employees to perform their duties more efficiently and fitting them for promotion.

There are many methods of acquiring an education and many men who have been their own teachers are more highly educated than the average of college graduates. Such men, however, are rare. In considering any large group, we must consider a plan within reach of virtually all its members and not merely the exceptional ones. Railroad work becomes increasingly complex as restrictions on private initiative multiply and the need for men thoroughly trained in all phases of their work grows apace.

Are not the possibilities of a greater extension of educational facilities sufficiently promising to warrant at least a study of what may profitably be undertaken along this line?

The Efficient Tax Collector

THE year 1926 was the most prosperous the railways have had since the war, and every figure excepting one in their reports for 1930 thus far has presented a striking contrast to the corresponding figure for 1926. The exception is the figure showing their total taxes. In the first quarter of 1926 their taxes amounted to $88,169,682. In the first quarter of 1930, the worst year thus far that they have had since 1922, their taxes amounted to $88,372,893. Their total earnings, freight revenues, passenger revenues, operating expenses and net operating income have all shown a large decline as compared with those of 1926, but while they have neither collected as much money from their customers nor paid as much out for wages and other operating expenses, the efficient taxing authorities of our various governments have succeeded in squeezing more money out of them than they did when general business was at its best.

Taxes in the first quarter of 1930 were higher in proportion to every other item of income and outgo than they ever were in the first quarter of any preceding year. In the first quarter of 1923 they were 5.16 per cent of total earnings; 1924, 5.39 per cent; 1925, 5.77 per cent; 1926, 5.98 per cent; 1927, 6.07 per cent; 1928, 6.28 per cent; 1929, 6.45 per cent; 1930, 6.63 per cent.

When total railway earnings increase taxes always increase more than in proportion. If taxes decline when total earnings decline, they always decline less in proportion than total earnings. When earnings increase again, taxes always make a new high record both in absolute amount and in proportion to every item of income and operating expenses.

It is all very well to talk about the inefficiency of our governments; but each of our governments has one branch that is highly efficient—that is, its taxing branch. In the first quarter of this year the net operating income of the railways was $175,253,628, out of which they had to pay all the return upon their outstanding capitalization—interest upon bonds, as well as dividends upon stock. In 1916 the taxes of the railways were only 15 per cent as great as their net operating income, while in the first quarter of the year 1930 their taxes were almost $88,400,000, or more than 50 per cent as great as the net operating income they earned.

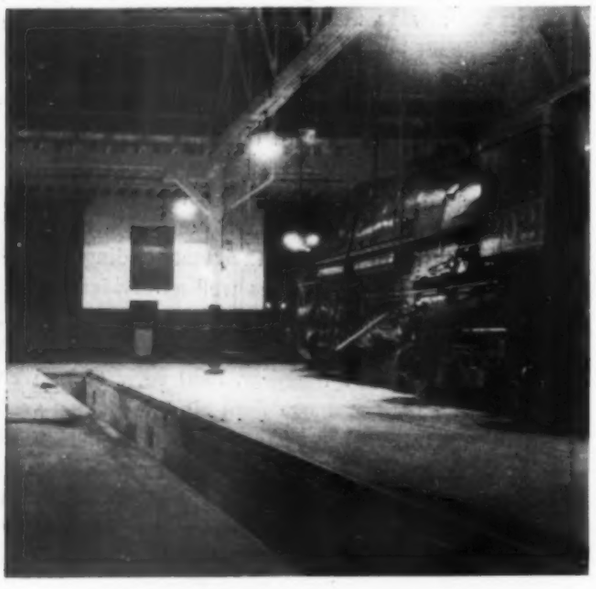
If taxes continue to increase in future as fast as in recent years it will not be long until the taxes of the railways will exceed the total return they are allowed to earn upon the entire investment in their properties.

The Hamilton Engine Terminal During Construction

T. H. & B. Builds Fireless Enginehouse

Complete terminal and shop facilities opened on new site at Hamilton, Ont.

ON April 16 the Toronto, Hamilton & Buffalo placed in operation a new terminal at Hamilton, Ont., for handling its locomotives and those of the Canadian Pacific. It includes a 27-stall enginehouse and repair shop, with mechanical coal- and ash-handling plants, a modern stationary boiler plant, a storehouse and a motive-power department office building. The enginehouse is equipped with direct-steaming facilities and is designed for fireless operation. Smokejacks are omitted from all except five stalls. This terminal, which represents an investment of approximately $1,250,000, including land and grading, replaces an old terminal on another site which was too restricted to permit the development of longer enginehouse stalls and turntable and adequate repair-shop facilities.



Interior of the Enginehouse at Night

The old terminal is located in the Dundurn street wye and is completely hemmed in by tracks which made expansion impossible. Accordingly, after a careful study, it was decided to abandon this site, and a new site of 21 acres was purchased. This property, formerly occupied by brickyards, is located between Robinson street and Aberdeen avenue in the western part of the city and lies between the old shops and Aberdeen yard, adjacent to the tracks of the Waterford subdivision. In several respects the site is particularly favorable. It is relatively remote from real estate development, is conveniently accessible, and the hard, dry clay subsoil simplified the construction of foundations.

About 240,000 cu. yd. of grading was necessary to obtain the required track and building levels. Grading operations were started in the fall of 1928 and were completed in the summer of 1929. Building operations were commenced in June and the buildings were practically all enclosed before the winter.

The Enginehouse

The enginehouse is of brick and concrete construction, with an inner wall radius of 138.53 ft. The first seven stalls, which form the drop-pit and heavy-repair section of the house, are 155 ft. long in five bays. The center bay is 72 ft. across, from center to center of columns, and the roof is supported on wood trusses between monitor windows. The clear height under the trusses is 23 ft. 6 in. From the inside circle wall the two inside bays are 25 ft. and 19 ft. in width, respectively, the roof over each sloping toward the intermediate column line and draining through 5-in. galvanized wrought-iron leaders to openings in the sides of the track pits 8 in. from the bottom. The outside bays, from the monitor toward the outside, are 19 ft. and 20 ft. in width, respectively, and the slope of the

roof remains unbroken toward the outside circle wall.

This section of the house is occupied with stripping and erecting operations and heavy running-repair work. Under tracks 2 and 3 is a Whiting electric drop table for driving and engine-truck wheels. Under track 4 is a similar table for trailer and tender wheels. A telfer track, equipped with a Northern 10-ton electric traveling hoist, leads from between tracks 2 and 3 to the wheel press and wheel lathes in the adjoining shop building.

The 20 stalls of the enginehouse proper are 110 ft. long, in three bays. In this section of the house the trusses which support the roof over the center bay are 60 ft. long and the clear height under them is 18 ft. 6 in. The arrangement of the roof is shown in the section drawing. The floors are of concrete, laid on a gravel base, the whole of the enginehouse area having been excavated and backfilled with gravel and consolidated with water. The windows of the enginehouse are fitted with wood sash throughout.

This portion of the house is separated from the drop-pit section and is divided into two 10-stall sections by brick firewalls. Smokejacks for blowing flues on engines are provided over tracks 8 to 12, inclusive, adjoining the drop-pit section of the house. All stalls throughout the house have concrete pits, with drains at each end.

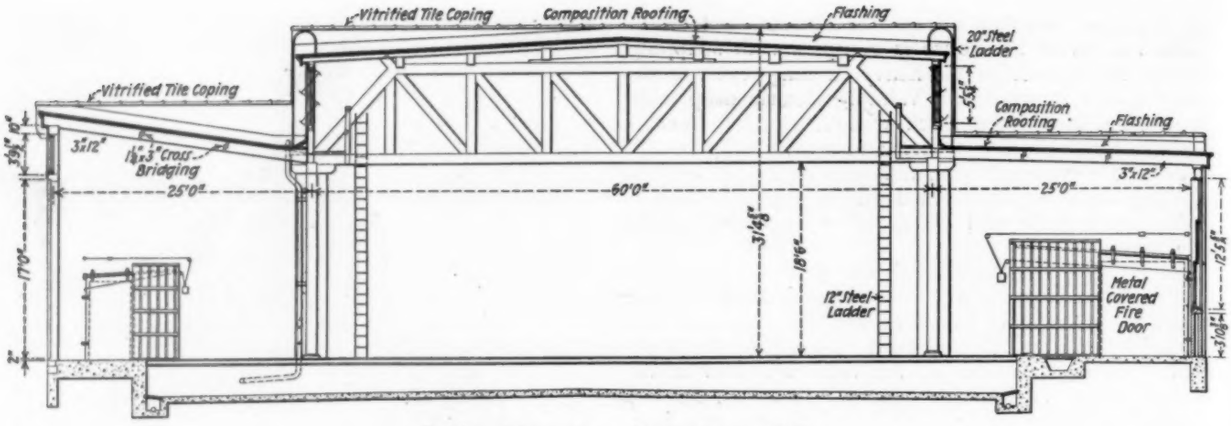
The turntable is 100 ft. long. It is of the continuous three-point type, supported on a concrete center pier and a concrete ring. The ends of the table are carried on a 127-lb. circular rail secured to plates supported directly on the concrete. It is operated by two electric driving motors and is provided with one auxiliary air motor, controlled from one operator's cabin. It was built by the Canadian Bridge Company, Ltd.

The 300-Ton Coaling Plant

The Repair Shop

The shop building, which extends back from the outside circle at the end of the drop-pit section of the enginehouse, is 80 ft. wide by 220 ft. long. It is of brick and concrete construction, with pivoted steel window sash, and the monitor-type roof is supported on steel trusses. The floor has a concrete base surfaced with Kreolite wood blocks, with concrete foundations for the heavy machines. Adjoining the enginehouse the first 160 ft. of this structure is occupied by the machine shop and, separated by a fire wall, the remaining 60 ft. is occupied by the blacksmith and

A Night View of the Hamilton, Ontario, Engine Terminal of the Toronto, Hamilton & Buffalo



Section Through an Enginehouse Stall

flue shops. The flue rattler is housed in a small brick structure at the end of the shop building.

Space is provided in the shop section of the enginehouse for the boiler and sheet-metal shop facilities.

Extending along the side of the shop building 103 ft. is a two-story brick and concrete addition, 18 ft. 6 in. wide. This building, which faces the ash-pit tracks, contains the offices of the general foreman and engine despatcher, the register room, shop men's locker and toilet rooms, and a first-aid room on the first floor, and shop men's and enginemen's rooms, toilet and supply rooms on the second floor. A bay window in the general foreman's office affords a complete view of the service tracks from the turntable to the coaling plant.

The Storehouse and Office Buildings

The storehouse is a one-story structure, 185 ft. long by 77 ft. wide. Approximately 100 ft. of the building is of brick and concrete construction, with the floor at car-floor level. This portion of the building contains the storekeeper's office, the oil and waste storage and the stocks of finished materials. The remainder of the building is of frame and galvanized corrugated sheet metal construction and is unheated. The floor is at yard level. Platforms and ramps are provided for both car and truck deliveries.

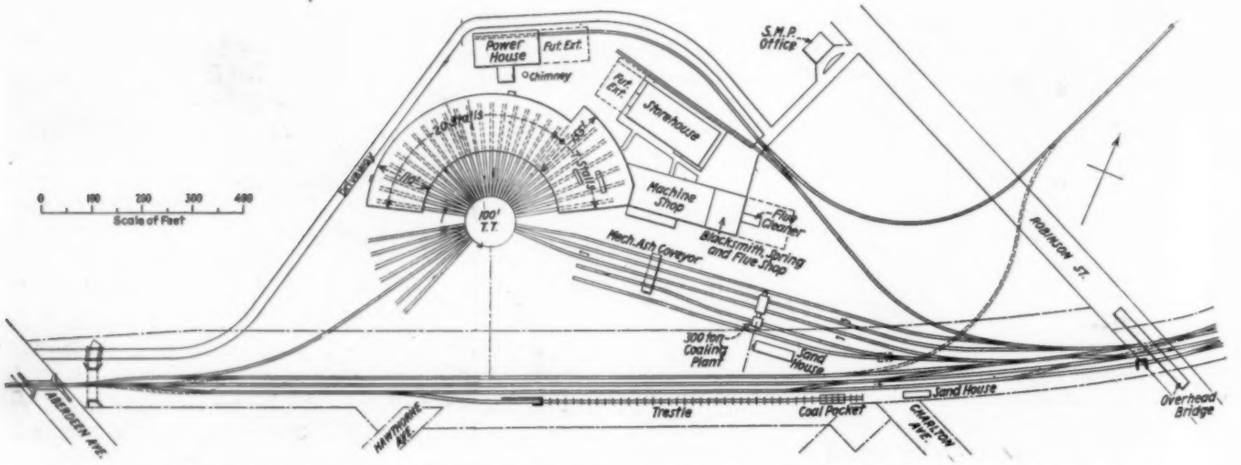
A two-story office building, 40 ft. by 50 ft., has been provided for the superintendent of motive power and his staff. This building is fitted with steel sash and is heated from power house. Floors are laid with battleship linoleum.

The Power House and Direct Steaming Facilities

As the enginehouse is equipped with the direct-steaming system, stationary boiler capacity must be provided to carry the load formerly carried by the locomotives themselves. The power house at the Hamilton terminal is equipped with three Connelly 260-hp. watertube boilers operating at 200-lb. pressure, and with all necessary auxiliaries to insure efficient and economical operation.

The power-house building is 65 ft. by 130 ft., of brick and concrete construction, with steel-trussed roof and steel sash. The boiler-room is 70 ft. long and provides space for the installation of another boiler. The floor is approximately 9 ft. below the yard level and the coal cars enter the building at yard level and dump to the floor under the track. From a hopper in the floor the coal is elevated by a Nicholson coal-handling plant to a hopper above the boilers and piped by gravity to the stoker hoppers. Ashes are handled by a Hahn steam-jet system from the boiler room to a 41-ton cast iron ash hopper located over the coal track outside the building.

The boilers are fired by Detroit multiple-unit rear-dump stokers. In addition to the induced draft from the 175-ft. chimney, the boilers are equipped with



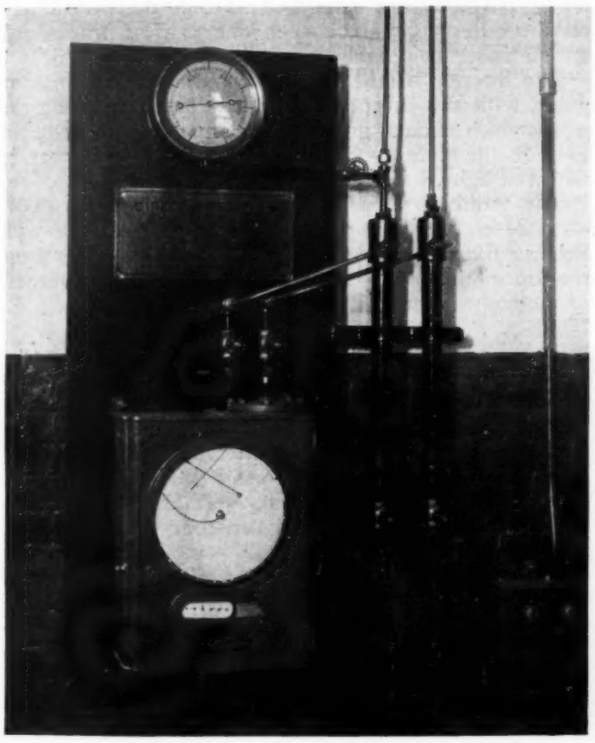
Plan of the New T. H. & B. Engine Terminal—The Enginehouse Stalls are Numbered from Right to Left

auxiliary steam-turbine-driven fans. A Hagan combustion controller automatically regulates the dampers and the speed of the stoker engines and draft fans to meet variations in the load. The boilers, stokers and settings were installed by E. Leonard & Sons and the piping and pumps by the Robert Fitzsimons Co., Ltd.

In the engine room is a 1,400-cu. ft. steam-driven air compressor and the boiler-washing and filling system tank and pump.

Electric Power Supply

In one corner of the engine room, within a brick and concrete fireproof, enclosure, is located the switchboard. The electric power for the terminal is brought into the power house on a specially constructed high-tension line of the Dominion Power & Transmission Company, which leads directly from the main service lines and is, therefore, expected to have practically no voltage fluctuation. From the Westinghouse switch-

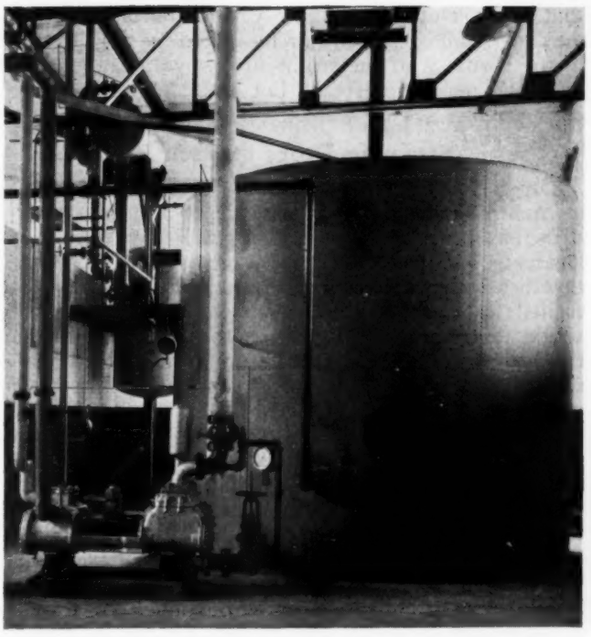


The Enginehouse Steam-Flow Meter

boards in the power house the power is distributed through two outdoor transformer banks, one located near the power house and one about 500 ft. south of it. All low- and high-tension feeders are laid in underground ducts throughout.

The hot-water boiler-washing and filling system and the direct-steaming equipment were installed by the Railway Engineering Equipment Company. Owing to the fact that the railroad owns but thirty-three locomotives and that these require boiler washing once a month, or an average of about one boiler wash daily, it was not considered necessary to install the double-tank system. Accordingly, a 20,000-gal. tank for filling water supplies both washout and filling water and the water from the steam separator in the blow-down line, passes through a water seal to the sewer.

Steam is conveyed to the enginehouse from the power



The Boiler-Washing and Filling Equipment

house through an 8-in. main. This leads to an overhead line which extends around the entire circle of the 110-ft section, thence around the drop-pit section and through the shop, from which branches lead to the storehouse and office building and to the sand house.

Steam Consumption Checked

A complete system has been provided by which the consumption in the various parts of the plant may be readily checked. The output of each boiler is measured by a Republic recording and integrating steam-flow meter. Where the 8-in. main enters the enginehouse a Bailey steam flow meter has been installed. This meter will record the entire output of the plant not consumed in the power plant itself. Other Bailey meters have been installed at points in the line such

Equipment at One of the Locomotive Firing Stations

that the consumption of the various parts of the load may be obtained directly or measured by the difference in the readings of meters in successive locations. The overhead mains for steam, hot and cold water and the blow-off line are of welded construction.

Steaming Drops at Each Pit

Drops for the direct steaming system are provided at each pit in the enginehouse proper and an extension drop has been carried into the back-shop section for steaming locomotives after the completion of repairs. Overhead valves in the drop lines from the mains, controlled by chain handles from the floor, connect the single flexible drop line with either the blow-off line, the hot-water filling and high-pressure steam lines, or with the hot- and cold-water lines, the latter when washing out.

It is the practice at Hamilton to keep all locomotives which are ready for service under steam. With the absence of smoke jacks the radiation from these locomotives serves to heat the house. To provide additional radiation in severe weather, two unit hot-air heaters are installed, one for each 10-stall section of the house. Each heater, which is housed in a 10-ft. by 12-ft. room built outside the outside circle wall, delivers either fresh or recirculated air through underground ducts to four pits, outlets being provided along the sides of these pits. One heater is located opposite tracks 12 and 13 or at the center of this section of the house. The other is located opposite tracks 25 and 26, near the end of the house. The drop-pit section of the enginehouse and the shop building are provided with unit hot-air heaters installed on the walls.

Coaling Station

The terminal is provided with a 300-ton reinforced concrete coaling station. This is the Roberts & Schaefer shallow-pit, roller-skip type, with a hoisting capacity of 75 tons per hour, the bucket having a capacity of two tons. Once started, the operation is automatic.

The cinder-handling plant is a Roberts & Schaefer N & W type, electrically operated, serving three tracks. The bucket has a capacity of 80 cu. ft. Its movement is selectively controlled from a push-button station at each track, so that the bucket may be returned to the dumping position under any track as desired. The ash-pit hoppers and control gates are of cast iron and the gates are equipped with an interlocking device to prevent the hoppers from being opened except when the bucket is in the filling position underneath.

Firing Stations

Three firing stations are provided for igniting the fuel on the grates of locomotives after leaving the enginehouse under steam from the direct-steaming system. Two of these are located adjacent to the outgoing tracks near the ash pits. A third is located near the single incoming and outgoing track which connects with the main tracks near Aberdeen avenue. These stations each consist of a small housing, the top of which is at the yard level, which provides protection for the oil and compressed-air service connections and for the firing-up torch when not in use.

The sand-handling facilities are housed in a 20-ft. by 80-ft. concrete and frame building containing one Beamer steam sand drier and Roberts & Schaefer compressed air sand-elevating equipment. This building is located adjacent to the coaling plant, and provides a wet storage capacity of 500 tons, with a drying capacity of eight tons a day.

Lighting

Six 100-watt Benjamin angle reflectors mounted back to back in pairs nine feet above the floor, are used between stall tracks in the enginehouse. The units in the first pair are mounted on opposite sides of a roof supporting column and the second and third pair are suspended from the roof truss by conduit from a self-alining fitting. They are located respectively 21, 35 and 51 feet from the outer circle wall. Angle reflectors are also used on the section walls.

In addition to the angle reflectors there are four Benjamin RLM reflectors between stalls, one over the outer circle runway, one over the inner circle runway, and two spaced equally between. They are respectively 150-, 200-, 100- and 100-watt units and are mounted 16 feet above the floor.

There are two portable extension outlets per stall. Their positions are staggered so that there is a pair on the outer column between one pair of tracks and on the inner column between the next pair.

The interior of the house is painted with white oil paint, with the exception of a six-foot strip along the walls which is dark green. The intensity and distribution of the lighting compares favorably with that in any well-lighted shop.

The terminal yard is illuminated with eight 1,000-watt, 24-in. floodlight projectors and fourteen 500-watt lighting fixtures. One of the photographs, taken from the top of the coaling plant, illustrates the effectiveness of the night illumination

Water Supply, Sewerage and Drainage

Water is secured from the city mains through a 6-in. and 8-in. connection, forming a loop through the engine terminal cycle and feeding the necessary hydrants for fire protection. Water storage is provided in one 100,000-gal. tank and one 50,000-gal. tank, with 6-in. supply lines and 14-in. discharges into 12-in. mains, which furnish water for four 12-in. Sheffield water columns.

A complete system for drainage of surface, roof and waste water is provided separate from the sanitary sewer. This consists of vitrified pipe encased in concrete where necessary, and concrete and iron pipe ranging from 6 in. to 24 in. in diameter, with manholes, catch basins and gratings through which the surface water is carried to its natural outlet. The sanitary sewer is connected with the city sewer system.

Operation

In the operation of the terminal all fires are dumped at the ash pits before the locomotives are moved into the enginehouse. It is the duty of the hostler and his helper to connect the direct-steaming system drop to the blow-off cock before leaving the locomotive. It is then ready to be blown down, washed out and refilled, or to be kept under steam until ready to leave the house for despatchment. One attendant lays the fire and tends to the blowing-down, refilling and steaming operations. On leaving the house it is the duty of the hostler to disconnect the direct-steaming drop before moving the locomotive.

With the relatively high temperature of the coal in the firebox, the fuel is completely ignited over the entire grate area by the use of the oil-fired torch at the firing station in an average of about 3 min. This operation is performed by the hostler or his helper.

From the direct-steaming system the railroad company anticipates the benefits of reduced fuel consumption, reduced boiler maintenance, a reduction in fire hazard, a saving in enginehouse labor, quicker despatching of locomotive and better working conditions. Abatement of the smoke nuisance which is always a source of annoyance to the surrounding territory is also assured.

Although the road owns but 33 locomotives, a large proportion of these locomotives, as well as a number of Canadian Pacific locomotives, are dispatched from Hamilton daily. The road distances are relatively short and the locomotive make turn-around runs. Belt line service in Hamilton requires the use of a number of switch and transfer engines. Altogether, the daily dispatchments vary from a minimum of 25 to as many as 35 or 40. The repair shop is equipped to turn out two locomotives a month with class repairs. It also takes care of all heavy running repairs.

The contractor for the grading, foundations, sewers and water mains was the Dominion Construction Company, Ltd. The buildings were erected by this company and W. H. Cooper. The radial brick chimney was built by the Custodis Canadian Chimney Co., Ltd. The contractor for the electrical work was The Culley Electric. The construction of the terminal was carried out under the direction of R. L. Latham, chief engineer of the railroad, and E. M. Brennan, resident engineer, in direct charge.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended May 24 amounted to 931,472 cars, only a slight increase as compared with the preceding week and a decrease of 130,616 cars as compared with the corresponding week of last year. This was also a decrease of 89,931 cars as compared with 1928. All commodity classifications showed reductions as compared with last year, coal loading showing a falling off of 20,645 cars and miscellaneous loading a reduction of 55,064 cars. Also all districts reported reductions as compared with both preceding years. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, May 24, 1930

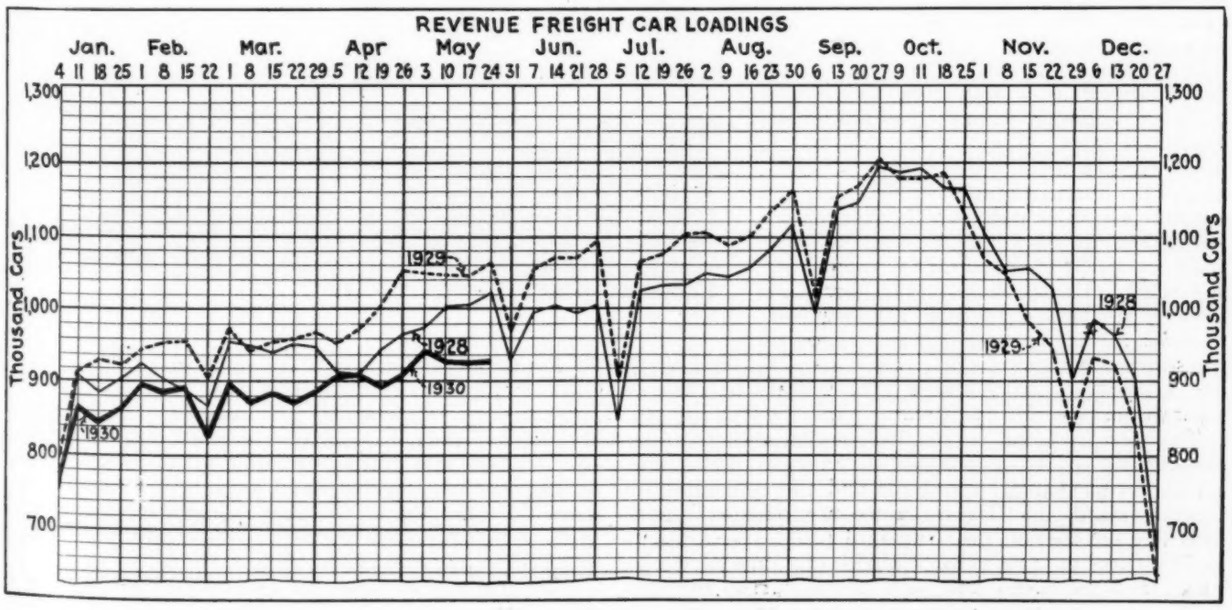
Districts	1930	1929	1928
Eastern	216,790	251,760	243,131
Allegheny	190,498	223,643	209,904
Pocahontas	52,627	59,240	57,214
Southern	125,527	141,600	142,650
Northwestern	146,782	167,760	157,679
Central Western	130,510	141,512	137,514
Southwestern	68,738	76,573	73,311
Total Western Districts	346,030	385,845	368,504
Total All Roads	931,472	1,062,088	1,021,403
Commodities			
Grain and Grain Products	38,759	39,368	38,916
Live Stock	22,802	25,426	26,150
Coal	139,863	160,508	162,917
Coke	9,368	12,629	9,913
Forest Products	51,235	69,099	68,509
Ore	58,897	73,485	58,851
Merchandise L.C.L.	246,276	262,237	259,764
Miscellaneous	364,272	419,336	396,383
May 24	931,472	1,062,088	1,021,403
May 17	930,004	1,046,594	1,003,288
May 10	933,931	1,048,960	1,002,411
May 3	942,899	1,051,935	978,053
April 26	907,174	1,051,885	963,007
Cumulative totals, 21 weeks	18,627,610	20,352,247	19,537,658

The freight car surplus for the week ended May 15 averaged 410,131 cars, a decrease of 1,917 cars as compared with the preceding week. The total included 209,344 box cars, 143,483 coal cars, 28,501 stock cars and 16,304 refrigerator cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended May 24 totaled 57,937 cars, a decrease of 4,556 cars from the previous week and a decrease of 6,373 cars from the same week last year.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
May 24, 1930	57,937	29,637
May 17, 1930	62,493	34,155
May 10, 1930	60,929	35,409
May 25, 1929	64,310	41,913
Cumulative Totals for Canada		
May 24, 1930	1,202,984	760,152
May 25, 1929	1,334,627	910,380
May 26, 1928	1,323,249	838,906

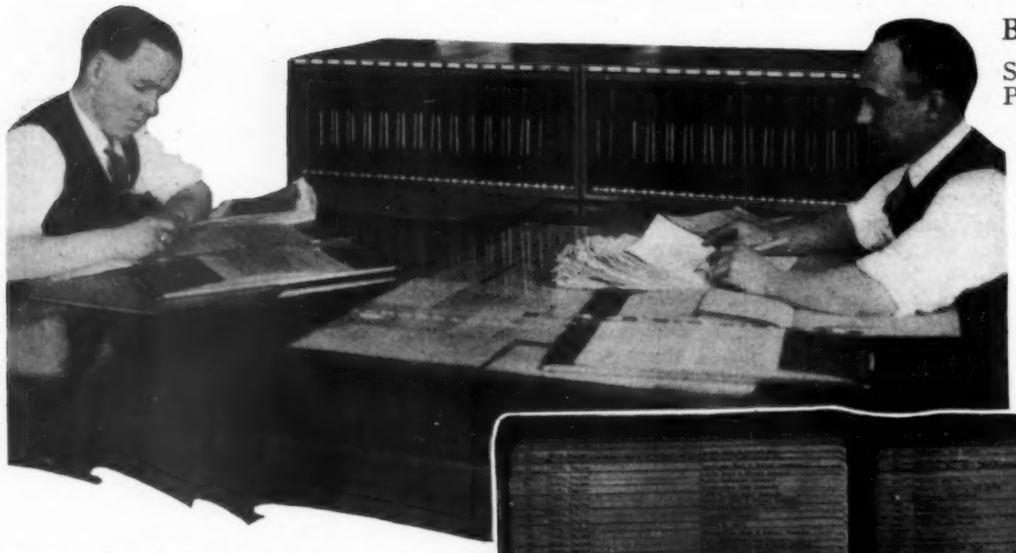


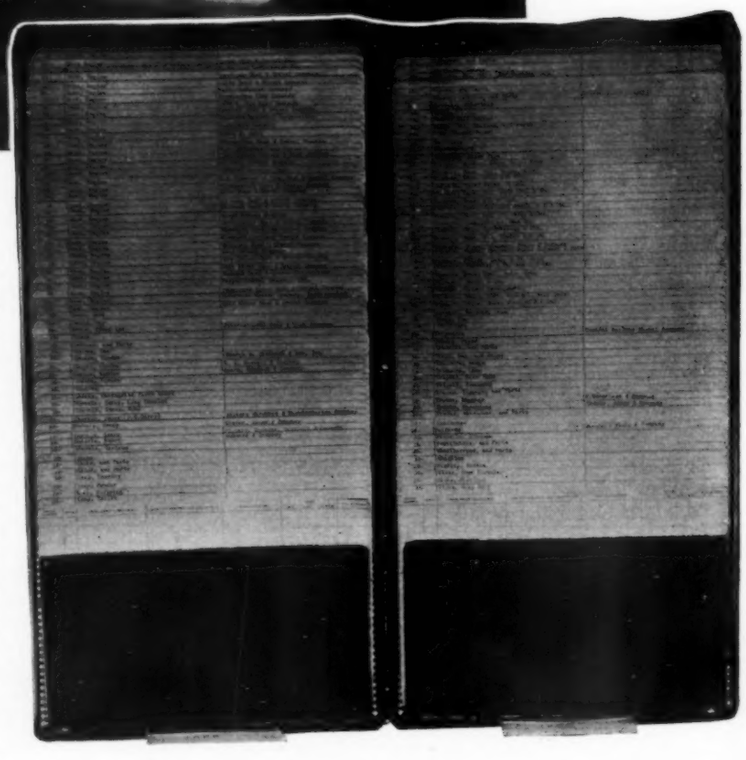
How the Illinois Central Does its Buying

Systematic checking of 125,000 bills a year a big job but a money saver

By P. C. Mayer

Special Assistant to Purchasing Agent, Illinois Central System





Checking Bills in the Purchasing Department

One of the New Price Books

ALL purchasing activities on the Illinois Central are conducted under the general direction of a vice-president, to whom the store and test departments also report. The work is divided as follows:

The assistant to the vice-president specializes in rolling stock purchases and keeps in touch with organization matters of all departments, reporting to the vice-president. The purchasing agent negotiates contracts for all major items and gives his personal attention to the important items of fuel and forest products. The assistant purchasing agent, next in line of duty and responsibility, shares the purchasing of such materials and supplies as can be conveniently grouped for specialized handling and is assigned commodities which are obtained for use on rolling stock. The assistant to the purchasing agent is similarly engaged in handling commodities for maintenance of way and general transportation requirements. Such items as commissary and stationery require special men and are handled as separate units within the general purchase organization.

The vice-president, besides having charge of the purchasing and supply department, is chairman of the committee on mechanical standards and the committee on roadway standards. The commitee on mechanical standards has jurisdiction over standard plans, specifications and practices relating to locomotives, cars, marine equipment, shop machinery and tools, and comprises the general superintendent of motive power, the superintendent of the car department and the engineer of tests, while the committee on roadway standards, consisting of the chief engineer, the engineer maintenance of way and the engineer of tests, has jurisdiction over standard plans, specifications and practices relating to roadway, bridges, buildings, track appliances and tools. All materials purchased or used and all practices followed in construction and maintenance work are required to meet the standards established by these committees.

The engineer of tests, the general fuel inspector, the chief lumber inspector and the superintendent of ties and

treatment, with their respective organizations, report to the vice-president in charge of purchases and supplies, but the services of the test department and various inspectors are available to all departments.

The stores department is organized under a general storekeeper who reports directly to the vice-president, and two assistant general storekeepers who have jurisdiction over the Northern and Southern lines, respectively. Besides a general storekeeper, there are eight division stores situated at convenient locations on the system, serving all departments. The bridge lumber and tie storage is in charge of the superintendent of ties and treatment who supervises the distribution of such untreated and treated lumber and ties as may be handled through the plant, while the timber treating plant operations are under outside control.

The stores department is charged with the supervision, distribution and care of all unapplied materials on the railroad. It is recognized also as a "Service Department," and is the channel through which material constantly flows from manufacturer to the point of material consumption. Motorized equipment, such as auto-trucks, tractors and lift trucks, in addition to trailers, skids and many forms of special hauling and unloading devices, are used to meet the needs effectively and economically.

Upward of forty thousand separate and distinct items of material are used on the railroad. These items, through the use of a standard material classification are placed in approximately fifty material classifications. The supply division maintains the identity of the items through the various classifications, both in terms of physical units and of money as reflected in a monthly balance sheet, while control of the material stocks is accomplished through the use of standard stock books in each storehouse and distributing point and a master stock book in the office of the general storekeeper. Before any requisition goes to the purchasing agent, the items are checked against the master stock book to see if anything called for can be furnished from any other point on the system.

Requisitions for Purchase

All requisitions for material intended for general stores stock are prepared by the general storekeeper, while the division storekeepers prepare purchase requisitions, subject to the approval of the general storekeeper, to cover materials which cannot be supplied by the general storehouse or any other storehouse on the system and when such materials can be conveniently shipped direct to the division stores point or other local point of consumption.

The local officers of all operating departments order their material on what are known as transfer requisitions. These requisitions are sent to the division storekeepers who prepare purchase requisitions after a check has been made to insure that the items cannot be furnished from stock. There are instances when purchase requisition forms are prepared by the mechanical, telephone and telegraph, signal, bridge or building department for non-stock items or for those of a technical nature for the sole use of the department, but such requisitions must be signed by the general storekeeper before the materials can be purchased. All purchase requisitions are transmitted to the purchasing agent by the general storekeeper.

Purchases

Manufacturers who are favorably situated along the lines of the road are usually in the best position to meet competition and give prompt service, but industries more remote from points of consumption secure a good share of such purchases. All manufacturers, however, must compete in the matters of price and quality. Many of the items are purchased from month to month under price agreements. These operate not only to the advantage of the railroad but to the manufacturer as well. Under these arrangements, the manufacturer can anticipate his output with a fair degree of reliability and the railroad can be assured of price protection for a reasonable length of time. If prices should fall after these agreements are made, the railroad is given the benefit of the reductions. Miscellaneous purchases are made by sending out inquiries for competitive bids; this is also done as far as possible with special materials.

Clerical Assistants

The details of purchasing are handled by clerical assistants or "order clerks" who prepare the inquiries for bids, receive and tabulate the bids and prepare the purchase orders. The number of requisitions which call for bids varies from day to day. The number of items of material on a requisition also varies. During an average day, however, prices are obtained on 500 distinct items from 100 or more firms. The work of keeping up-to-date lists of the sources of supply and attending to the price inquiries is considerable. The delivery of material is also an important factor in purchasing, this work being followed to conclusion by the Illinois Central purchasing department.

Division of Accounts

The purchasing department of the Illinois Central has an accounting division. Over a period of one year, approximately 52,000 requisitions are received and handled; 66,000 purchase orders are issued; 125,000 invoices received and 49,350 vouchers issued. The business of the accounting division is to see that all these records are properly accounted for as they move along. Each invoice is rendered in quadruplicate. The date received, the purchase order reference, shipping instructions, quantities, freight charges and descriptions of materials are scrutinized and the unit prices and extensions are verified. The stores department handles each invoice further in a similar manner. When properly substantiated by a receiving record, the store department certifies that the material has been received and taken into the proper material and supplies account, and the invoice is then returned to the purchasing agent's office where a voucher is prepared for payment.

The vouchers, accompanied by the original certified invoices, go to the auditor of disbursements with a record showing the distribution of amounts to the various material accounts. The latter is compared with similar reports transmitted to the auditor of disbursements directly by the various stores or division accountants.

Statistics

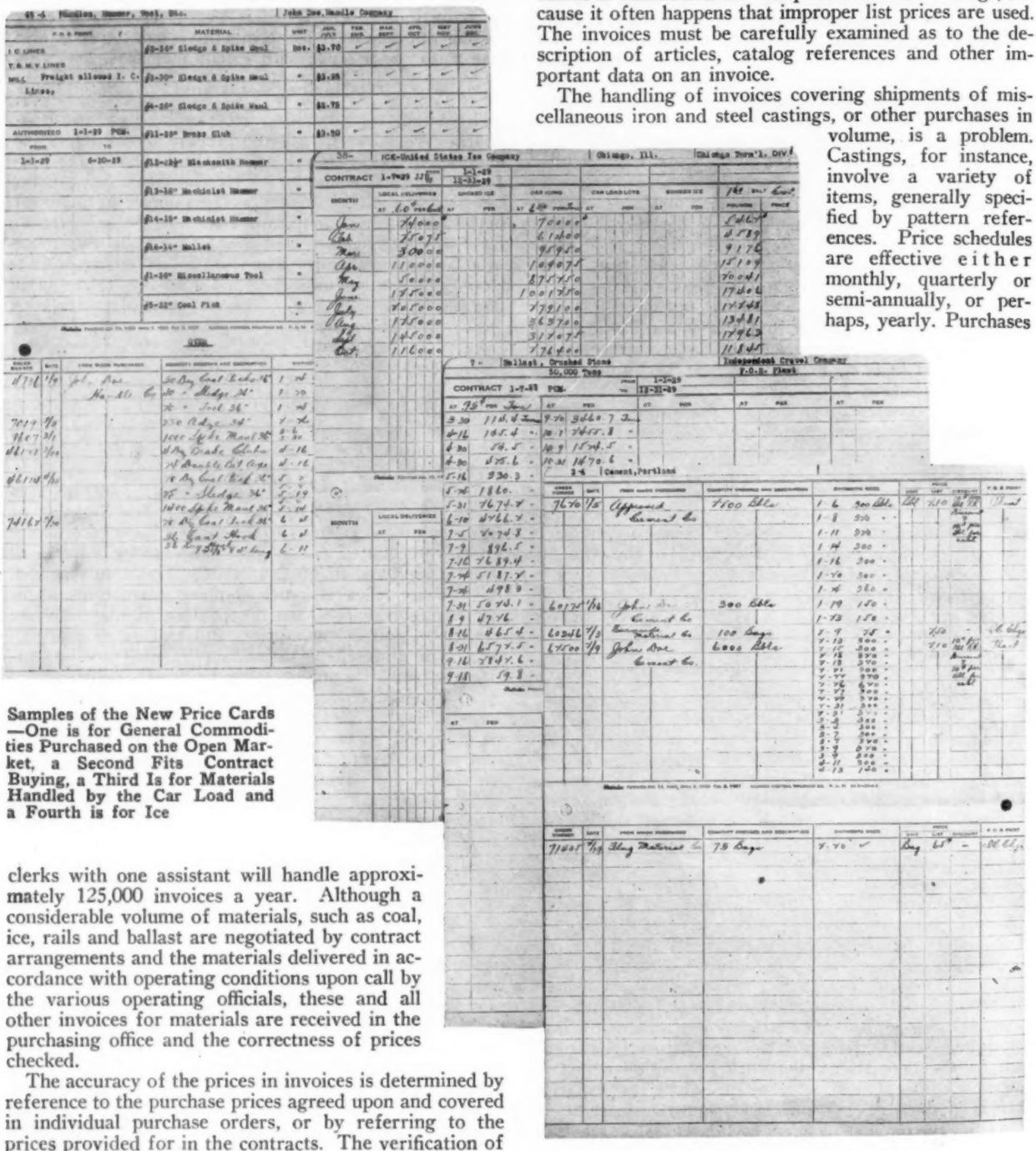
The purchasing department of the Illinois Central also has a statistical division which is organized to prepare any data needed by the purchasing officers as well as to provide the various executives of the company with such data as may be useful in their considerations of the purchase and distribution of materials. Daily reports are prepared which give the volume of purchases being made from day to day and there are also daily reports covering the value of invoices from the various shippers for some of the major items, such as fuel, rails, ballast, ice and for miscellaneous materials. The vouchers issued in payment for these items and outstanding commitments are also reported from day to day during a calendar month and compared with the same month in the previous year.

Other statistical records are kept in readiness to meet the wishes of the management. Market data and prices are kept and unit costs of principal commodities are

charted to show their comparison with costs during other periods. Graphic charts, showing the trend in the volume of purchases and disbursements, are also provided.

Pricing

In practically all Illinois Central purchasing work, the price clerk has an important part to play. One of these clerks with one assistant will handle approximately 125,000 invoices a year. Although a considerable volume of materials, such as coal, ice, rails and ballast are negotiated by contract arrangements and the materials delivered in accordance with operating conditions upon call by the various operating officials, these and all other invoices for materials are received in the purchasing office and the correctness of prices checked.



Samples of the New Price Cards —One is for General Commodities Purchased on the Open Market, a Second Fits Contract Buying, a Third Is for Materials Handled by the Car Load and a Fourth is for Ice

The accuracy of the prices in invoices is determined by reference to the purchase prices agreed upon and covered in individual purchase orders, or by referring to the prices provided for in the contracts. The verification of these prices is the important operation and is not placed secondary to writing purchase order details on price cards. The prices shown in an invoice do not merely receive a mechanical check. Invoices are rendered for materials and supplies purchased at competitive prices which are shown on the record copy of a purchase order and it should be comparatively simple to verify such prices when an invoice is received. There are many instances in the course of a day's duties, however, where incorrect prices are used, and a watchful price clerk, by detecting these inaccuracies, not only saves his own company, but the shipper, a considerable amount of money. It is considered equally important to verify prices which are not always shown on a purchase order but are contained in manufacturers' list price sheets or catalogs, because it often happens that improper list prices are used. The invoices must be carefully examined as to the description of articles, catalog references and other important data on an invoice.

The handling of invoices covering shipments of miscellaneous iron and steel castings, or other purchases in volume, is a problem. Castings, for instance, involve a variety of items, generally specified by pattern references. Price schedules are effective either monthly, quarterly or semi-annually, or perhaps, yearly. Purchases are made specifically under these schedules to obtain "quantity" or "weight" price advantages. The volume of the purchases throughout the year is immense and the invoices become voluminous and tiresome to handle. The billing departments of shippers are not free from making mistakes. A peculiar turn in the application of price schedules can easily develop and a mistake may be

carried on for some time before it is detected. Guarding against these mistakes has proved an easy way to save money.

The adoption of the simplified invoice form, recommended for use by all shippers by the Bureau of Simplified Practice of the Department of Commerce, has been particularly valuable in producing a uniform method by which shippers bill materials, and many exceptions, which formerly had to be taken to shippers' invoices, have been eliminated and delays avoided. The use of the simplified invoice form has been of decided benefit in purchasing work.

The Illinois Central has recently adopted a new system in its price recording and checking work, which has provided an easily accessible means of maintaining a record of contract price arrangments and miscellaneous commodity purchases. The form of record adopted has allowed the extensive use of the material classification arrangement. The purchase order numbers are prefixed by the material class reference, and record by classes is maintained accordingly. Short and long term contract prices are detailed on separate commodity cards and all the cards are arranged so that a continuous record can be kept for several years.

This illustration consists of two steel cabinets, each containing 16 aluminum panels, or flatbooks. The panels contain 8½-in. by 6-in. standard fold cards, there being 140 single cards to a panel. More than one card may be placed on each wire, thus increasing the capacity of each panel.

There are four distinct printed forms of cards in use; one is adapted to general materials and supplies purchased at open market or competitive prices; a second form is similar to the first card, except that it is adapted for a record of specifications and terms; a third card is printed for commodities shipped in tonnage or car lots, such as ballast, engine sand, etc.; and the fourth card is adapted as an "ice" price and tonnage record. Visible tabs on the cards show the material class numbers and are alphabetically arranged by commodities. These printed forms are arranged to provide for all the essentials of this record with the minimum of writing, avoiding the constant repetition of writing commodity specifications, firm names, contract prices and terms.

A comprehensive record is maintained with a minimum of 5,000 cards. The saving in time is an important feature to a price clerk. The material class arrangement facilitates an understanding of the specialized lines of material, and invoices can be handled consistently. Not all items are catalogued in this record and it is not necessary to do so. The office record copies of the purchase orders are all intact, and the authority for accepting the prices contained in a purchase order, especially on commodities provided by agreements, is fully maintained.

International Railway Congress

More than 800 delegates in attendance at eleventh meeting held May 5-15 at Madrid—Next session at Cairo, Egypt, in 1933

THE eleventh International Railway Congress was held in the Senate Palace Building, Madrid, May 5-15. His Majesty Alfonso XIII, King of Spain, acting as Honorary President, presided at the opening session, on the afternoon of May 5.

The delegates were organized into five sections, as follows:

I. Way and Works, Sir Charles Morgan, C.B.E., director of the Southern Railway, England, presiding.

II. Locomotives and Rolling Stock, W. Wechmann, director, German Government Railways, presiding.

III. Working (operation), M. le Besnerais, assistant chief engineer, Exploitation, Northern Railway of France, presiding.

IV. General, Count J. Moreno, engineer, operating department, Northern Railway of Spain, presiding.

V. Light Railways and Colonial Railways, Dr. Antonio Crispo, Inspector general of railways, tramways and automobiles, Ministry of Communications, Italy, presiding.

The registered attendance was over 800, including the following delegates from the United States:

U. S. Government Delegates

Col. E. A. Simmons, chairman, president of Simmons-Boardman Publishing Corp., New York; George R. Carr, chairman of the board, Locomotive Firebox Company, Chicago; A. S. Merz, vice-president, Standard Railway Equipment Company, Chicago; Charles H. Muchnic, consulting engineer, New York; W. J. Plogstead, General Railway Signal Company, New York; Fred A. Poor, president, P. & M. Company, Chicago; Bird M. Robinson, president, American Short Line Railway Association, Washington, D. C.; Walter J. Schleiter, president, Verona Tool Works, Pittsburgh, Pa.; Harold A. Smith, Transportation, Los Angeles, Cal.; James B. Strong, president, Ramapo Ajax Corporation, New York.

U. S. Railway Representatives

H. J. Forster, secretary and treasurer, American Railway Association; Baltimore & Ohio, H. B. Voorhees, vice-president; Delaware & Hudson, H. F. Burch, assistant general manager; Erie, Dr. Herman von Schrenk, consulting timber engineer; Illinois Central, W. H. Chisholm, European traffic manager; New York Central, W. L. Lentz, engineer of motive power (Mr. Lentz also represented the American Railway Association), D. R. MacBain, general manager, Lines west of Buffalo, J. V. Neubert, chief engineer maintenance of way, W. C. Wishart, vice-president; Pennsylvania, Porter Allen, chief engineer maintenance of way, Western region, A. J. Ball, foreign freight traffic manager, M. W. Clement, vice-president (operation), F. W. Hankins, chief of motive power, G. LeBoutillier, vice-president, New York Zone, W. D. Wiggins, chief en-

gineer, Central region; Reading, Charles H. Ewing, vice-president, Jay V. Hare, secretary.

The sessions were fairly well attended in proportion to the interest of the delegates in the subjects discussed. From the standpoint of the English-speaking delegates, however, the proceedings were less satisfactory than were those at London five years ago. The rule is that each session of the Congress shall have two official languages. One of these is French and the other the language of the country in which the session is held. Translations of discussions into English were confined to brief summaries of the comment on subjects under review. American delegates, practically all of whom understand no language but English, were therefore greatly handicapped in their efforts to follow the proceedings and participate in the discussions. It was decided to hold the next session at Cairo, Egypt, in 1933.

The delegates of the Canadian railways were anxious to have the next meeting of the Congress held in Canada. The English delegates also were in favor of this, and the government delegation from the United States had been authorized to second any invitation that the Canadian government might extend. However, it became clear that the Permanent Commission of the International Railway Congress had, in effect, prior to the Madrid meeting, committed itself to accepting the invitation of the Egyptian government, and it was thought best by the English speaking delegates not to take any stand that might be regarded as an affront to the Egyptian government. There was a further possibility of conflict because Japan had expressed a wish that the next Congress convene in Tokio. There is a feeling that the International Railway Congress is increasingly becoming a Continental European Congress. This feeling is shared even by English railway officers, and it seems highly probable that unless a change is made in the general policy of the Congress there will be a reduction of the participation in it of representatives of English speaking countries.

King Alfonso in opening the session introduced Senor Matos, Minister of Public Works, who welcomed the delegates on behalf of the Spanish government.

"I have the task and honor of pronouncing the first speech in this International Railway Congress," he said in part. "The Congress has an international character, that is to say that the national frontiers have disappeared for the purpose of pursuing the common welfare. We feel united in the solidarity of those sentiments which lead to international peace and international tranquility. . . . . In the name of the Government I welcome all members. Spain's accomplishments in the railway field are known to everybody. The constant object of all the governments who have succeeded each other has always been improvement of existing railways and the creation of new elements of transport. . . . . I trust that every one of you will take back to his country pleasant remembrances of Spain and a feeling of having experienced loving hospitality in the country."

M. Foulon, director general of the Belgian National Railways and chairman of the Permanent Commission of the Congress, replied briefly to the foregoing remarks of the Minister of Public Works, thanking King Alfonso for the honor which he had done the delegates in accepting the presidency of the Congress and the Spanish government for the warmth of the welcome extended. He continued to sketch the history of the International Railway Congress from its founding in Brussels in 1885 and to point out its benefits to railway men of all nations. There followed also a greeting from the president of the delegation from Spanish railways.

Conclusions and Recommendations

With the close of these exchanges of greeting the several sections of the Congress proceeded to a consideration of the questions assigned for discussion. The main conclusions evolved on the subjects of more general interest to American railwaymen were as follows:

Methods to be used in classification yards to control the speed of vehicles being switched and to ensure that they travel on to the lines in the various groups of classification tracks:—1. The methods employed in classification yards to control the speed of vehicles being switched consist of:

A. A rational disposition of the lines and of their profile in order to ensure the most rapid switching possible.

B. To obtain the necessary slowing down:

(a) Braking appliances fixed to the vehicle (hand-brakes); *(b)* Portable shoes or slippers placed on the running rail or track by hand; (c) Shoes, slippers or skates placed on the running rail or track by mechanical (including electrical) means such placing being controlled from a distance; *(d)* Rail brakes or retarders parallel to the running rail or track, exercising either a lateral braking effect on the sides of the wheels of vehicles, or a braking effort induced by eddy currents. This braking being controlled from a distance.

2. Hand brakes *(a)* and portable shoes *(b)* necessitate the personal attendance or accompaniment of personnel for the purpose of applying braking when necessary and to the desired extent.

3. Distance operated shoes or skates *(c)* and rail brakes *(d)* permit of completely or partially centralised control of braking requirements, and enable some reduction in braking personnel to be effected.

4. In hand and portable shoe braking, as practised in England, the responsibility may be divided between a number of individuals.

5. In distance shoe or rail braking the responsibility is concentrated in one or a very few individuals who require to be located in an elevated position commanding a bird's-eye view of the sphere of operations.

6. At all large yards, where hump or gradient shunting is in operation or when new yards are contemplated, consideration should be given to the question of installing distance-controlled shoe or rail braking methods.

7. The difference in conditions, capacity and weight of vehicles in general, in the different countries, combined with the fact that distance-controlled shoe or rail brakes are in the process of development and improvement and the lack of experience of them in certain countries, prevent any general conclusion being reached in favor of a particular type.

8. The initial cost of introduction to complete distance-controlled shoe or rail braking is high in comparison with methods employed hitherto, but savings varying in extent in different countries, by the reduction of personnel, can be effected of a permanent and continued character.

9. The economies can be supplemented by grouping together the control of point or switch operation in the same location as the shoe or rail brake control. And it may be desirable that the points should be "quick-acting" and it is advantageous at high capacity hump yards for the points to be capable of being pre-set electrically and automatically changed by the vehicles themselves.

10. The primary considerations in regard to the gradient and height of the hump for distant-controlled shoe or rail braking are that it shall be such that the worst running vehicle under the most adverse conditions, curvature of track, weather, etc., shall reach the full distance required. Also that the preliminary character of the gradient shall be such as to give a sufficient impetus to vehicles or cuts at the start, so that they are sufficiently separated prior to reaching the points or switches and shall not stop in the point or switching area.

11. The necessary brake pressure to absorb if required the surplus speed can be concentrated or spread out through several appliances according to the power of the type employed.

The space available could be taken as the predominating factor as to the type of apparatus to adopt. It may be necessary even with a very powerful type of apparatus to possess several series of brakes in order to regulate the speed during the run from the hump and to maintain the space between cars of a different co-efficiency of running.

12. In principle, in mechanical brake installations, the first set is usually placed at the foot of, or immediately below the first or steepest part of the gradient with as many more sets as may be necessary, on the leads into the groups of classification tracks, with a further set at the commencement of each of the individual tracks clear of the point or switching area.

13. In purely rail braking installations the brake rails, one set or more as necessary, are usually located in the leads to the various groups of tracks only.

14. The greater the extent to which braking power, with the necessary elasticity of application, can be concentrated in the fewest appliances, the less staff of operators is required, so that the work can be speeded up, as an operator instead of having to watch a vehicle or cut through a succession of brakes, can the sooner turn his attention to the next oncoming vehicle or cut.

15. Certain forms of rail brake make it possible to obtain a braking force proportional to the weight of the vehicle or cut, which is an advantage, provided the construction is such that light vehicles are not lifted out when pressure is applied.

16. The initial cost of such rail braking appliances is at present comparatively high and necessitates certain standard features of design of layout of track, i. e. the balloon-shaped formation, with points or switches at more or less equal radii from the hump.

17. The initial cost of shoe braking apparatus is stated to be appreciably less and in suitable instances may be applied to existing layouts.

18. Certain types of rail brake are of such length that brake pressure can be increased or decreased at will as vehicles or cuts of vehicles are passing through them.

19. With the shoe brake there is not the same facility, as once the wheel has mounted the shoe the pressure is constant until the shoe leaves the track at what is a fixed position or cut-out.

20. One form of shoe brake has its normal rest position at the lower end of the brake area and is propelled towards an oncoming vehicle to the pre-judged distance necessary by the operator at will.

21. Another form of shoe brake has its normal position at the higher or commencing end of the braking area and may be placed on the rail at will by the operator as necessary and provides for the return of the shoe to the starting point automatically.

22. Rail brakes may be operated or controlled electrically, hydraulically, or pneumatically, or in part combination.

23. A purely automatic shoe braking appliance governed by the speed and weight of vehicles approaching and by the extent of occupation of the siding to be entered is in the experimental stage but this as yet appears to necessitate limiting to two at a time the number of vehicles being shunted.

24. Another appliance of interest which is at present being tried out is an accelerator which gives an additional impulse to badly running cars or during unfavorable atmospheric conditions.

25. A sufficient lighting arrangement of a modern type is desirable for all large yards, and particularly where rail-braking or shoe braking methods are in force.

26. Luminous signaling devices providing suitable code is advantageous for controlling speed of hump operations, being duplicated as necessary and supplemented by oral code signals such as electric or klaxon horns if required. It is found desirable to develop increasingly the systems which allow of the chief foreman directing operations to himself order the movements of cars from the train about to be switched.

27. Mechanical means for the transmission of cut lists or other documents afford a desirable means of expediting the conveyance of train papers, cut lists, etc., between the essential posts in the yard.

28. Electric teletype machines afford a ready and expeditious means of transmitting at one operation the switching or cut lists and of giving instructions to the rail brake and point or switch operators' cabin and other parts of the yard as necessary.

29. Loud speaker telephones for verbal messages are of considerable benefit for rapid communication between certain key positions in a hump yard.

30. In general the advantages claimed for distance-controlled braking methods embrace some, if not all, of the following advantages, according to local circumstances, and the particular type of apparatus used:

(a) Reduction in number and cost of brakemen; *(b)* Damage to goods and rolling stock diminished, with consequent reduction in claims and maintenance costs; *(c)* Increased safety of employees; *(d)* Slow working due to adverse weather conditions is counteracted; *(e)* Operating capacity of yards is enlarged; *(f)* Closing of small yards by concentrating the work at one large yard; *(g)* Certain yards closed during part of the 24 hours; *(h)* Avoidance of employment of extra staff in bad weather, or when extra shunting has to be done, *(i)* Reduction in locomotive-hours.

31. In certain instances where space permits, economical use has been made of small tractors capable of running between the different sidings and crossing the rails when necessary, for the purpose of propelling or hauling one or more vehicles at a time and closing up the vehicles which have been switched.

Use in railway work of machines for simplifying statistical and accountancy work:—1. The efforts to make the operations necessary for the carrying on of correspondence, accounting and statistical work more economical, are a part of the great question of measures to be taken for rationalization. The objective may now and then be reached by pure and simple rationalization, but more generally by rationalization coupled with mechanization.

2. In order that when choosing the means, the appropriate ones may be selected, it appears worthy of recommendation, that every administration should set up a special department whose duty should be to investigate uniformly the basic questions concerning rationalization and mechanization and which, with its accumulated knowledge, should stand behind the detached departments in an advisory capacity.

3. The common axiom governing mechanization should be: The introduction of office and similar technical apparatus is justified when, after taking into consideration purchase and high amortization costs due to rapid depreciation, savings are made or indirect advantages, such as the quickening or improving of work, are gained, such as will offset the costs.

4. Accurate judgment on the economic results of mechanization presupposes the existence of comparative accounting. The prompt production of the costs incurred by the introduction of machines and the working out of the costs of mechanical methods should therefore have careful attention.

5. The degree to which machines are occupied has considerable influence on the cost of mechanical operation. The policy of keeping the machines fully employed is therefore of the utmost importance in the organization of the work; in many cases, the centralization of work will be a preliminary step.

6. The office machines, mechanical installations and similar apparatus at present to be found in the use of the railway administrations, are of extraordinary diversity; on account of the continued progress in this sphere, each administration must in future choose in the light of the common point of view previously developed, the machines which are best suited to its particular needs and operations; an interchange of ideas at a later date is to be recommended, on the experience accumulated, especially that concerning machines built solely for railway purposes such as ticket printers and the like.

7. An advance of the very greatest importance in statistical and accounting operations is to be seen in the introduction for statistical purposes of machines (the so-called perforated card machines). Their advantage lies in the possibility of carrying out investigations more rapidly and more accurately and in the possibility of deepening the researches and opening up areas which could not be reached by purely manual methods. Inquiry is therefore possible into questions which, up till now, have been closed to investigation, especially on the economic side, and this makes possible the elucidation of important scientific problems regarding railway operation (cost problems).

8. The wider general introduction of the perforated card system will provide advantageous possibilities for international co-operation, especially in the matter of reciprocal accounting and perhaps for the question of international traffic statistics. It is recommended that developments in this direction should be watched, and that later, at the appropriate time, they should form the subject for further discussion.

Methods followed in training of staff, professional, technical and ordinary working grades:—1. Railway administrations should take particular care to select candidates possessing the necessary qualifications for the posts to be filled. To this end candidates should be required to pass an examination in general knowledge, or furnish a school certificate. Special examinations, including psycho-technical tests, should however, be instituted if necessary. Several administrations have made use of such tests with very satisfactory results; their extension is recommended.

2. Preliminary instructions should be given before the appointees commence work. This instruction will, of course, vary in character and duration, for ordinary workmen, artisans and clerks. Most administrations have made arrangements of this kind, particularly as regards apprenticeships. It is recommended that administrations should take care to give their manual workers at least as good a train-

ing as that afforded by other industries in their respective countries.

It is also recommended that all railway administrations in countries where military service is obligatory should give priority to their ex-apprentices who, on the termination of their military service, submit applications for employment in any posts that may be vacant.

3. In view of the information furnished by the various administrations and the trials already carried out, it is recommended that employees should be given regular and methodical instruction in regard to new regulations, new developments in their respective spheres of work, and be taught to carry out their work economically (i. e., obviating waste of time or materials) punctually, and with safety to themselves, the public, and the rolling stock, etc. The employees should be required to serve probationary periods, either in technical schools, or by instruction at the stations, depots, etc., using travelling schools, magic lanterns, and the cinematograph. Good results have been obtained from instructional cinematographs, and their use is recommended.

It is strongly recommended that men who work alone should receive careful instruction, and further that practical training should be given as regards the steps to be taken in the the event of accidents or other emergencies.

Furthermore, it is necessary to test the men from time to time to see that they have assimilated the knowledge imparted to them, and are making good use of it.

4. It is also recommended that support should be given, as far as possible, to private institutions which provide tuition for the men, and attention is drawn to the methods of teaching by correspondence, which has been successfully adopted by some Administrations.

5. Finally, men of particular merit should have an opportunity of being tested in regard to their powers of judgment and ability to command, with a view to promotion to the higher grades.

Gulf, Mobile & Northern Interests Boys in Safety

THE Gulf, Mobile & Northern has established as a part of its regular safety program a junior safety committee among the sons of employees. With this committee as a nucleus, the road has gone a step farther and is setting up other junior safety groups in the public schools, the G., M. & N. junior committeemen acting as general chairmen of the school safety committee.

The thought of the management, in inaugurating this move, has been that if the idea of safety is firmly fixed in the mind of the youth, it will be productive of a trained safety worker when he becomes an adult. Instead of starting safety instruction when the young man takes his place in the ranks of the wage earners, the road plans to make safety education a continuing process, with its beginnings among the children. Railroad men's sons are apt to choose their father's vocation and it is expected that this latest safety activity will be productive of well-trained employees in later years.

The Committee Insignia

The Gulf, Mobile & Northern is particularly well situated for the prosecution of this work. Operating through a region in which there are few large cities, it reaches communities in which, with the exception of school and church organizations, there has been little effort to stimulate organized activities among the boys. None of the towns on the line have Boy Scout troops or Junior safety councils.

The railroad junior safety committee is composed of boys who range from 10 to 17 years in age. They have no regularly assigned program of work, but are expected to assist the management at any time they may be called upon, and then along lines which are carefully planned to produce the best results. One phase of the boys' work has been in the distribution of literature and posters for a highway crossing safety campaign. They have also been of material help to the railroad in discouraging among school children, trespassing upon railroad property, "hopping" trains and similar hazardous practices.

An important part of the junior work includes the carrying of the safety idea into the homes of the employees of the road. It is part of the junior committeeman's program to say to his father when he leaves his home for railway duty: "Good day (or good night), Dad; be careful", thereby helping to keep the safety idea constantly before the employee.

A Group of G. M. & N. Junior Safety Committeemen
In this group are a trainmaster, an executive agent and a conductor, and the sons of a brakeman, four conductors, a clerk, a car inspector, an engineer, an agent and a fireman.

Committee meetings are held once each year. The boys are authorized to bring their school teacher, or a teacher of their choice, if they are in high school, and the pastors of their churches to attend the meeting, the railroad defraying all expenses of the trip. Each boy is provided with an annual pass over the entire system, in his own name, as an inducement to him to keep up interest in the work. Recently 30 of the boys were taken as a delegation to the Mid-South regional meeting of the Safety section of the American Railway Association at Memphis, Tenn.

As a further stimulation of interest in the committee work, the road conducted a membership button design and safety essay contest and 155 boys submitted either essays or button designs. The prize-winning design was used on a substantial metal coal-lapel emblem which was furnished to each committeeman. The winners of the two contests, sons of an agent and a section foreman, were given a trip to a football game at the University of Illinois, Champaign, Ill. The second prize winners in each contest, sons of a locomotive engineman and a supervisor, were provided with a trip to a football game at the Southern Methodist University at Dallas, Tex. Honorary prizes of $5 each were awarded to six other junior committeemen.

THE ABYSSINIAN RAILWAY, 486 miles long and operated by a company subsidized by the French government, showed a net operating income for 1927 of 17,689,609 francs, or approximately $707,484, according to reports received by the Department of Commerce. Freight traffic which totaled 67,072 metric tons in 1927, is growing slowly, while passenger traffic, which was nearly quadrupled between 1921 and 1927, is increasing at a much faster rate, mainly as a result of more patronage from the natives.

The Artistic Drapes and Interior Decorations of the Dining Car

North Coast Limited Trains Newly Equipped

Northern Pacific places in service new fleet of roller-bearing all-Pullman trains embodying latest features of passenger car design

THE Northern Pacific, on May 15, put into service a new edition of its fast transcontinental train, the North Coast Limited, operating between Chicago and north Pacific coast cities and provided with the latest facilities for long-distance travel comfort. Equipment for the new fleet of trains was built by the Pullman Car & Manufacturing Corp. All cars are equipped with roller bearings. Observation cars have radios, and a number of new features have been incorporated in the diners. Six of the new trains will be in regular operation, with equipment sufficient for a seventh held in reserve.

Two types of roller bearings were installed in the new trains. Nine dining cars and 31 sleepers are equipped with American Steel Foundries' roller-bearing axle units, while 10 observation cars, 6 sleepers and 4 parlor cars have Hyatt roller-bearing units. In the former unit, the wheels turn on stationary axles. This construction utilizes the standard friction bearing, journal box, axle, journal and correlated parts, and is available for operation at all times, should the roller bearing unit in the wheels cease to function for any reason. The other type of roller bearing assembly embodies the roller-bearing units in the journal boxes at the end of the axles, the axle rotating within the roller bearings. In adopting these roller bearings, Northern Pacific engineers were convinced that they would make for smoother train operation and stand up under the strain of the long run between Chicago and the north Pacific coast cities.

Pullmans on the new North Coast Limited contain ten sections, one drawing room and one compartment. The compartment and drawing room can be used en suite, if desired. Dressing rooms are unusually large. Deep box spring beds are provided in lower and upper berths.

The cars are 83 ft. in length, carried on cast steel trucks and with steel underframe and superstructure. The interior finish also is of steel. The steam heat is automatically regulated by thermostats, giving individual heat control in the various rooms. The ventilating system includes air intakes in the window sash and electric blow fans and exhaust fans, in addition to the ordinary exhaust ventilators.

Bronze lighting fixtures of special design have mica shades.

The tunnel-like effect produced by the length of a car is overcome to a degree by means of a series of

Radio-Equipped Observation Car on North Coast Limited

arches of new design, which divide the car into a number of semi-private sections.

The architectural features in the main part of the car are finished in light walnut with light color ceilings; the sections and the partitions are decorated in green and gold. The rooms are enameled in warm umber tones. The color scheme of the car is in contrasting harmony with the light green color scheme of the fabrics. The specially designed carpet has a background of black with figures of green, taupe, red and blue. Felt padding is used under all carpets. Rubber tiling is employed in dressing rooms.

A new design of washstand in the men's dressing room has a shelf for holding toilet articles. Clothing wardrobes have been provided in the compartments. Both compartments and drawing rooms have cabinets for toilet articles. Special care was given throughout to provide better ventilation.

Dormitory for the North Coast Limited Dining Car Crew Located in the Baggage Car

New diners on the North Coast Limited have 12 tables, seating 36 guests. Decorations reflect the modern trend, long window drapes being among the new features. The kitchen range is of Monel metal, while Duraluminum is used for the floor racks in the pantry.

The dining cars are equipped with chrome-vanadium bolster springs, high-silicon equalizer springs, clasp brakes, thermostatically-controlled heat, cork-insulated refrigerators and special lighting fixtures. The latter include a light over each table.

The former standards of the North Coast Limiteds in the beauty and comfort of their observation cars are maintained. These cars are radio-equipped and have barber, shower bath, maid and valet service, as well as soda fountain, card room and main lounge.

I.C.C. Private Car Order Is Sustained

THE validity of the Interstate Commerce Commission's order in the private car case was sustained in a decision rendered on May 28 by a federal court of three judges sitting in the district court for the western district of Kentucky, denying the application of the Louisville & Nashville, Illinois Central, Baltimore & Ohio, Chesapeake & Ohio and Cleveland, Cincinnati, Chicago & St. Louis for an injunction.

Plaintiff carriers sought to enjoin the enforcement of the commission's order of November 4, 1929, requiring all carriers subject to its jurisdiction to cease and desist from transporting private passenger train cars, including so-called office cars, of other carriers, free or at other than published tariff rates, and to enjoin and set aside a regulation of the commission of July 30, 1929, prohibiting the issuance of car passes, except for cars owned by the issuing carrier, or held by it under lease for use in its business as a common carrier, and except for cars of lines operated as a part of the system of the issuing carrier. The order was issued by the commission as the result of an investigation.

The sole question, the court said, is whether or not the commission under the law has the authority to deal with the matter and the conclusion was reached that "the practice condemned by the commission is a matter within its jurisdiction, and, being supported by substantial evidence, we are without power to interfere."

The commission in its report proceeded upon the theory that a private passenger train car or office car of one carrier, when hauled over the line of another carrier, and occupied by an officer or employee of the owning road holding a pass issued by the moving carrier, moves as an article of commerce, and not as a transportation facility of the moving carrier, and that therefore it can not be moved by such non-owning carrier over its line, except in strict compliance with section 6 (1) (7) of the interstate commerce act. The commission then found that its free transportation by such non-owning carrier constitutes an unjust discrimination, denounced in section 2 of the act, and the giving of an undue and unreasonable preference and advantage, prohibited by section 3 of the act.

The plaintiffs argued that when a common carrier exercises its legal right to issue a pass to an officer or employee of another common carrier, or to members of

their families, in exchange for a like courtesy, it has the right to transport such pass holder in whatever appropriate vehicle it may see fit to use; that from whatever source the car may be obtained, it is a transportation facility of the moving carrier, and not an article of commerce, for the movement of which it must charge the owning carrier the published tariff rate.

The plaintiffs also contended that the provisions of the act, requiring the filing and publication of tariff schedules, and adherence thereto, and the provisions of sections 2 and 3 of the act, against unjust discrimination and undue or unreasonable preferences, have no application to persons or property which the law permits to be moved free or at reduced rates. It was further argued that the alleged long-continued sanction by the Interstate Commerce Commission of the practice constituted a binding interpretation of the act as permitting the practice, and that Congress in re-enacting the provisions with reference to passes and reduced rates, had impliedly adopted such interpretation.

It is thoroughly settled, the court said, that the commission has no power to control the judgment of the carrier in the method it adopts to supply itself with the necessary equipment to perform its duties as a common carrier of passengers. The right to thus acquire its equipment, however, does not imply the right to so use such equipment as to give the pass holder passenger an undue preference or advantage over paying passengers. The opinion continues in part:

It was the purpose of Congress, in enacting the Interstate Commerce Act, to strike down all forms of unjust discrimination, favoritism and inequality on the part of common carriers in the performance of their duties as such. No common carrier subject to the provisions of the Act has a right to give, and no person has a right to accept from such carrier, any undue preference or advantage. Any act or practice which may be reasonably construed as an unjust discrimination or as an undue preference or advantage, is undoubtedly a matter within the jurisdiction and subject to the control of the Commission, unless authority for such act or practice can be found in the Act itself.

But for the exceptions found in Section 1 (7) and Section 22 (1), a common carrier subject to the provisions of the Act would have no right to give a pass to any person, and the giving of such a pass would undoubtedly be a violation of Sections 2 and 3 of the Act. The exceptions found in Section 1 (7) and 22 (1) are simply a statutory declaration that the giving of passes to the classes therein named shall not be considered as an unjust discrimination under Section 2, nor as an undue or unreasonable preference under Section 3. However, when Congress authorized the carriers affected by the Act to give free tickets or passes to their own officers and employees and their families, and to exchange with other such carriers passes for their officers and employees, we must assume that Congress used the words "free ticket," "free pass" and "pass" in the sense that those words are commonly and ordinarily understood. A pass or a free ticket, as ordinarily understood, connotes free transportation in the ordinary way and with the usual conveniences afforded the paying public. To construe the permission to grant free passes and free tickets, contained in Section 1 (7) and Section 22 (1), as authorizing not only free transportation of the holder, but transportation in a private car with all the conveniences thereof, would amount to a distortion of the language used and a perversion of the central purpose of the Act. A fair interpretation of the two sections referred to, when they are read in connection with the other provisions of the Act, is that they authorize the giving of free transportation to the persons therein named, with jurisdiction in the Commission to determine if the method of transporting the pass holder, and the conveniences afforded him, constitute an unjust discrimination, prohibited by Section 2, or the giving of an undue or unreasonable preference, within the meaning of Section 3 of the Act.

Construing the Act in this way, it seems to us wholly immaterial whether we view the private or office car, occupied by a pass holder who is an officer or employee of the owning road, as an article of commerce when moving over the line of a non-owning carrier, or as a transportation facility of the moving carrier. If it is an article of commerce, it is being transported free for the benefit of the pass holder; if it is a transportation facility of the moving carrier, it is being furnished free to the pass holder. In either event he enjoys the service thus afforded as a privilege granted by his pass, and the service and the facilities thus afforded him so far exceed those furnished ordinary paying passengers as to bring the practice clearly within the jurisdiction of the Interstate Commerce Commission.

We are not impressed with the argument of the plaintiffs that inasmuch as there can be no discrimination or preference under the Act except between persons or articles of the same class, preferential treatment of the pass holder can not constitute a violation of the Act. Pass holders and paying passengers are of the same general class—they are all passengers. It costs no more to transport one than the other. The pass holder is lifted out of the provisions of the Act only to the extent that he does not have to pay the usual and ordinary transportation charges exacted of other passengers. In every other respect he is on the same footing as other passengers, and if the facilities afforded him are found by the Commission, upon substantial evidence, to amount to an unjust discrimination or an undue or unreasonable preference, the Commission has the power under the Act to deal with the matter without interference from the courts.

The plaintiffs suggest that such a construction of the Act would prohibit common carriers from furnishing their officers and employees and the officers and employees of exchanging roads with passes carrying ordinary Pullman accommodations, which practice has always had the sanction of the Commission. It must be remembered, however, that the Act does not denounce every preference or discrimination. What is prohibited is unjust discrimination and unreasonable and undue preferences. We can very well understand how the Commission may consider that the granting of Pullman privileges to a pass holder is not an unjust discrimination against paying passengers nor an unreasonable preference to favor of the pass holder, and yet hold that to furnish the pass holder with a private car is an unjust discrimination and an undue preference.

Government Opens Second "Reciprocal Buying" Case

EARLY hearings on the government's second case on "reciprocal buying" of draft gear by railroads, held at Buffalo, N. Y., on June 2 before Examiner Averill of the Federal Trade Commission, were devoted largely to examination of the corporate structure, sales and sales promotion methods of the Waugh Equipment Company, Depew, N. Y., the principal respondent. Much of the evidence offered was ruled out on objection of counsel, with the result that most of that allowed to stand was of a documentary nature, consisting of figures on sales of draft gear, and pamphlets employed by the Waugh Equipment Company in advertising and sales promotion work.

The case (Federal Trade Commission Docket No. 1779) originated, as reported in the *Railway Age* of April 19, page 926 in a complaint issued by the Federal Trade Commission against the Waugh Equipment Company, charging that said company was controlled by the individual respondents, Arthur Meeker, F. W. Ellis and J. B. Scott, all officers of Armour and Company, the packers; and that the individual respondents, in exchange for stock of the Waugh Equipment Company, had agreed to "induce and compel. . . . .various railway companies to purchase draft gears and other equipment manufactured and/or sold by said respondent corporation," by promising to route Armour traffic over the lines of such railroads as bought this equipment. All general and specific allegations made in the complaint were denied by the respondents in an answer filed with the Commission on May 9. (*Railway Age*, May 24, page 1252.)

The first witness to be called, Carl F. Ehrlich, secretary of the Waugh Equipment Company, presented certified statements of ownership of the outstanding stock of that company, showing the names of all stock-

holders and the number of preferred and common shares owned by each, as of August 15, 1924, shortly after organization, and as of May 1, 1930. At the request of E. F. Haycraft, the government attorney, the witness then produced the company's stock record books and traced, step by step, the major stock transfers in the period between the drawing up of the two statements.

This record showed A. J. Pizzini, president of the Waugh Equipment Company, to have been, at all times during this interval, the largest single holder of the company's stock, and also that he personally had bought, at various times, the shares of the original owners for subsequent resale to other parties. The stock ownership statement of May 1, 1930, showed that Mr. Pizzini is still the largest individual holder of the company's stock, owning about one-fourth of the 8,666 shares of common stock and over 600 of the 692 shares of preferred stock now outstanding. Others who were listed as holders of more than 100 shares of common stock were: Arthur Meeker; Etta L. Ellis; Whitehouse Investment Company; George A. Hood, trustee; Celeste K. Scott; International Business Machine Company; A. L. Bolte; C. J. Faulkner, Jr.; and J. J. O'Fallon.

Mr. Ehrlich was then asked about the corporate structure of the Waugh Equipment Company. Reading from the certificate of incorporation, he testified that until 1,200 shares of preferred stock should have been redeemed, the preferred stockholders were to have the right, voting as a class, to elect a majority of all directors. After such retirement of 1,200 preferred shares, all stockholders were to be on equal voting terms. More than 1,200 shares of the preferred stock were ordered for retirement in December, 1929, and actually redeemed in March, 1930. Since the preferred stockholders had exercised their voting privileges prior to this time, three of the four directors now in office, J. M. Waugh, A. J. Pizzini and Wait Talcott, were elected by the owners of preferred shares. The common stock was increased from 7,000 shares to 8,666 shares in December, 1929, but the common stockholders have not recently elected a fifth director, so that at present there is one vacancy on the board.

R. J. O'Brien, vice-president and general manager of the Waugh Equipment Company in charge of purchasing, research and production for the last two and one-half years, followed Mr. Ehrlich on the witness stand. After stating that his company made many types of draft gear, but that it was difficult to say that any one type constituted the bulk of its business, because of constant changes in design as a result of development work, Mr. O'Brien presented advertising bulletins descriptive of various types of gear.

The witness was then shown papers purporting to list the sales of freight car draft gear by the Waugh Equipment Company to 16 specified railroads during the latter part of 1926, the year 1927, and the first five months of 1928. He produced the company's sales records for the purpose of checking them against the government figures, when E. M. O'Brien, attorney for the respondent, suggested that to avoid the necessity of checking all sales at the hearing, he would furnish the government with a complete checked list of sales to all railroads, showing the road and number, type and destination of gear sold. This proposal was accepted by counsel for the government.

An attempt was made at this time to introduce evidence that the Waugh-Gould draft gear, one of the company's products, had been sold at different prices to different roads at various times. On objection of counsel for the respondents that such matter was irrelevant to the case and that varying prices were not unusual, Examiner Averill threw out the question on the ground that the complaint did not allege the use of price discrimination.

Mr. O'Brien, when questioned regarding his part in the sales activities of his company, stated that Mr. Pizzini acted as general sales manager, and that his own share in sales negotiations with railroads had been merely that of a technical expert. Correspondence and memoranda showing his activity in sales work was introduced from the files of the Waugh Equipment Company, but was marked for identification only and not admitted as evidence, with the exception of one letter from Mr. O'Brien to F. W. Ellis arranging for tests of draft gear to be made at the Waugh laboratory by Atchison, Topeka & Santa Fe engineers, prior to a sale of draft gear to that road. Direct examination of the witness ended with his agreeing, at the request of the government attorney, to prepare as accurate a list as possible from the records available of the railroad draft gear sales of the Waugh Draft Gear Company for approximately five years before its absorption by the Waugh Equipment Company, and a similar list of sales of Gould draft gear prior to the purchase by the Waugh Equipment Company of the patents for that gear about January 1, 1927.

Under cross examination, Mr. O'Brien mentioned rubber draft gear, platform buffers for passengers cars, centering devices and portable draft gear test cars as being some of the products made and sold by the Waugh Equipment Company in addition to draft gear. He also described briefly the tests made of Waugh-Gould draft gear by Santa Fe engineers prior to the purchase of gear by that road, as mentioned in his letter to Mr. Ellis, referred to above.

A. J. Pizzini, president of the company, was the last witness to be called on the first day of the hearing. He produced correspondence, which was marked for identification but not included in the record, between himself and J. M. Waugh, A. L. Bolte, Thomas Bragg and others, relative to the condition of the Waugh Draft Gear Company at the time it was taken over by the Waugh Equipment Company in 1924, but asserted that he had no correspondence between himself and Messrs. Meeker, Ellis or Scott relative to sales of Waugh Equipment Company's draft gear or distribution to them of Waugh Equipment Company stock. On cross examination, he stated that information secured by him on the condition of the Waugh Draft Gear Company in 1924 included statements of sales volume, operating expenses and net profits.

The hearing adjourned to convene in Boston, Mass., on June 5.

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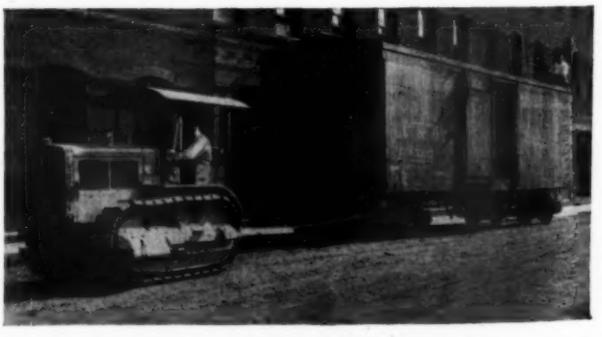


Switching Cars With a Caterpillar Tractor That Has Rubber Shoes

Centennial of New England Railroads

Charter granted by the Massachusetts legislature to the Boston & Lowell, June 5, 1830

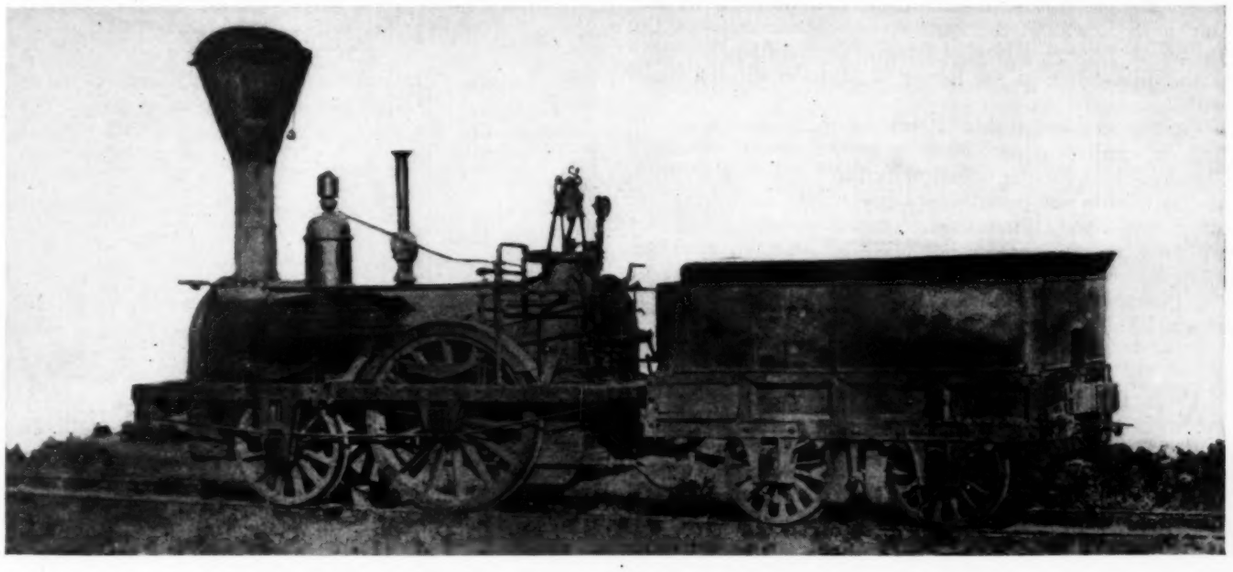
THE Boston & Maine, in cooperation with the city of Lowell, Massachusetts, celebrated in Lowell this week Thursday, the hundredth anniversary of the granting of the charter of the Boston & Lowell Railroad, which was voted by the legislature of Massachusetts on June 5, 1830.

This is called the centenary of New England *steam* railroads as the Granite Railway, the three-mile line built in Quincy, a few miles south of Boston, in 1826, and which was the first railroad in the United States, was operated by horses and by gravity; and moreover, was used only for the transportation of granite for the Bunker Hill Monument. (The celebration of the centenary of the Granite Railway was noticed in the *Railway Age* of October 16, 1926, page 722.)

The present celebration is also a part of the general movement in Massachusetts to celebrate this year the tercentenary of the settlement of the Massachusetts Bay Colony; and the exercises were participated in by Lieutenant Governor William S. Youngman, Mayor Thomas H. Braden, of Lowell, Hon. Redfield Proctor, president of the New England Council, and other public officials. Mrs. Edith Nourse Rogers, member of Congress from the Lowell district, presided at the public exercises, which included a luncheon attended by about 700 people and held in the Memorial Auditorium at noon. The luncheon was followed by a parade.

Representing the Boston & Maine in the ceremonies were chairman Thomas Nelson Perkins, President Edward S. French and other officers. After the parade, Mr. Perkins, for the railroad, presented to the city a bronze tablet recording the genesis of steam railroads in New England, the work of Sculptor Karl Gruppe. This tablet is to be placed in Lucy Larcom Park, near the site of the first railroad station in Lowell; and with it the railroad company has laid a 12 ft. section of track made from parts of the original Boston & Lowell structure—granite substructure and fish-belly rails.

The Boston & Lowell, 26 miles long, from Boston northwest to Lowell, is now a part of one of the main lines of the Boston & Maine, that which is traversed by the through trains between Boston and Montreal. As before stated, the company was organized in 1830; but in the five years intervening between that time and June 24, 1835, when the road was opened, two other roads, the Boston & Worcester (now a part of the Boston & Albany) and the Boston & Providence (a part of the New York, New Haven & Hartford) had been chartered, built, and opened for business.



Type of Locomotive Used at the Opening of the Boston & Lowell, 1835
Built by Robert Stephenson & Company, Newcastle-on-Tyne.

The road was leased to the Boston & Maine in 1887. By that time it had built or bought numerous extensions and branches and the total mileage owned was 111; total miles of track 282; and there were, in addition, 371 miles of leased roads. The leases were transferred to the Boston & Maine. In 1919 the Boston & Lowell was consolidated with the Boston & Maine.

The early agitation for a railroad at Lowell is to be attributed to the enterprise of the manufacturing interests of that town which was the first cotton manufacturing center in America, and which was then enjoying the rapid growth of its lusty youth. The water power of the Merrimac river had just been developed and new factories were being established rapidly. The leading individual in the building of the road, who was also a leader in the manufacturing interest at Lowell, was Patrick T. Jackson, of Boston. Mr. Jackson's title, according to

the fashion of the day, was "Agent"; but he was a member of the board of directors and virtually managing director. He was also treasurer.

The First Locomotives

The first locomotives of the Boston & Lowell were built by Robert Stephenson & Company, having been ordered by Mr. Jackson in 1832, and one of the two original engines is depicted on the tablet. In searching the ancient records for a suitable description of this locomotive, considerable difficulty was encountered because of doubts as to details. In a collection of pictures in the Lowell Historical Society, there is one showing an engine with two pairs of driving wheels, coupled, which purports to be the first locomotive; but other information is to the effect that the engine had a single pair of drivers in front of the firebox and a pair of leading wheels of smaller size. The engine shown on the tablet has the smaller leading wheels, investigation having shown that the four-coupled arrangement depicts the locomotive at a future date, after the wheel arrangement had been changed. The first locomotives arrived in 1834. No picture or drawing of these is available, but from investigations recently made it appears that a locomotive of the Bangor & Piscataquis, in Maine, built by Stephenson in 1835, was of the same style as those built for the Boston & Lowell, and this Bangor & Piscataquis engine is the one shown in the larger illustration printed herewith.

On the occasion of this celebration the Boston & Maine had on exhibition at Lowell a replica of Stephenson's "Rocket" lent for the occasion by the Baltimore & Ohio, and at Boston another similar copy. Both at Boston and at Lowell the diminutive locomotive—the originals weighed about five tons or less—was shown standing alongside one of the new and powerful locomotives of the Boston & Maine, each of which, with its tender, is about 100 ft. long.

From the Pioneers' Discussions

From the records of the directors' and stockholders meetings of the Boston & Lowell for the years 1831-36, numerous interesting items have been gathered concerning the preparations for building this pioneer railroad. The act of incorporation was accepted on March 4, 1831, Charles Jackson being chairman of the meeting and Benjamin R. Nichols, clerk. Patrick T. Jackson, of Boston, who was agent of the Appleton Company at Lowell and evidently one of the leading business men of the rapidly growing city, was elected agent and treasurer of the railroad and appears to have been the moving spirit of the whole enterprise throughout the years of construction.

Choice of Power

One of the first questions to be determined was whether or not steam locomotives should be used. Evidently these Massachusetts leaders kept themselves well informed of the progress which was going on in England and the subject of locomotives was thoroughly discussed by the directors, but these discussions resulted after all, so far as the records show, in leaving the matter to the discretion of the agent (Jackson). Later Mr. Jackson reported that he had written to Mr. Stephenson to "send out two of his best locomotive engines." Whether any more detailed specifications were ever prescribed does not appear. Likewise in the matter of track, the most definite idea, at first, was that the rails ought to be like those used by the Liverpool & Manchester. A later vote indicates (January, 1833) that there had been received from England 6.93 miles of rails of the Liverpool-Manchester pattern; nearly one mile of Stevens' pattern and 3.36 miles of Vignoles rails, or in all about 11¼ miles. The locomotives were of 15 and 20 horsepower, respectively, and cost £850 and £1000. The cost of the locomotives, with tenders and some spare wheels and a few other small articles, was $10,746.29.

Track Construction

The Boston & Lowell was perhaps the most notable American example of rigid track construction, and in a report to the directors in December, 1833, Mr. Jackson, though recognizing that the road could be opened earlier by using wooden sleepers, decided in favor of granite. This report was adopted. "Trench walls" sunk from 2½ to 4 ft. below the surface were laid, and made about 2¼ ft. thick. On these walls were placed stone blocks and "binders"; generally six blocks and two binders to each 15 ft. rail. The question of using wood sleepers was, however, complicated by the prospect of laying a second main track; it was calculated that the use of the first track in transporting material for the second one

1830 1930
STEAM RAILROADS IN NEW ENGLAND
HAD THEIR BEGINNINGS
IN THE CHARTER GRANTED THE
BOSTON & LOWELL RAILROAD CORPORATION
JUNE 5, 1830
FIRST TRAIN OPERATED JUNE 24, 1835
THIS CENTENNIAL TABLET
PLACED OPPOSITE THE SITE OF
THE FIRST DEPOT BY THE
BOSTON AND MAINE RAILROAD

Bronze Tablet Set Up at Lowell, June 5, 1930

would be an important item in saving expense. There was even a question that it might pay to use wooden sleepers and then later put stone blocks in place of them. A second track, two miles long, was laid in Charlestown in 1833, the cost of which was about $25,000. It was estimated, judging by experience in England, that a second track could be laid on the whole line for $10,000 a mile.

When the road was opened there was a length of two miles laid with wooden binders (ties)—when stone could not be procured—and another short section was put in as an experiment. Mr. Jackson considered carefully all arguments, but concluded that the supports should be as solid and as unyielding as possible, in order to best preserve line and surface. In fact, he reported, six months after the road was opened, that the experience thus far had confirmed him in the opinion that where the stone supports were near enough together to prevent any bending of the rail, there would be "less jar and irregularity in the motion of the engine and cars, fewer accidents and, of course, less wear and tear on the carriages." He admitted that his view differed from that of others and that the expense of laying the track had been much beyond that on other roads; but the directors had backed him up and so the road was the most solid thus far built in America. The rigid track proved a complete failure; but how many years it took for the management of the

(*Continued on page 1386*)

I. C. C. Hoch-Smith Decision Over-Ruled

Supreme court holds resolution set up no new standard of rate reasonableness

WASHINGTON, D. C.

THE Interstate Commerce Commission's construction of the Hoch-Smith resolution as requiring it to prescribe rates on agricultural products lower than would otherwise have been reasonable under the provisions of the interstate commerce act was held to be erroneous in a unanimous decision rendered by the Supreme Court of the United States on June 2 in the California deciduous fruit case.

The court found that the joint resolution adopted by Congress in 1925 effected substantially no change in the meaning of the various sections of the existing law relating to transportation rates and that the paragraph applying particularly to rates on agricultural products does not "purport to make unlawful any rate which under the existing law is a lawful rate."

A serious constitutional question would be raised, said Justice Van Devanter in delivering the opinion of the court, if the language of the paragraph directing the commission to accord to agricultural products affected by the "existing depression" the "lowest possible lawful rates compatible with the maintenance of adequate transportation service" were taken, as the commission thought it should be taken, to require that rates be reduced "to some uncertain level" below the standard previously set by the law.

Therefore, he said, the commission's order of 1927, requiring a reduction in the rates on fresh deciduous fruits other than apples from California to eastern destinations, two years after it had decided that the same rates were neither unreasonable nor unduly preferential, should have been set aside by the court below, three judges sitting in the district court for the northern district of California. The railroads had appealed to the Supreme Court from a decree of the lower court dismissing their suit to set aside the order which reduced the rate to most eastern destinations from $1.73 to $1.60 per 100 pounds and the rate to transcontinental group from $1.62 to $1.50.

The proceeding which resulted in the order was instituted before the commission December 27, 1926, by the California Growers' and Shippers' Protective League through a complaint assailing the existing rates as unjust and unreasonable under section 1 of the interstate commerce act, unduly and unreasonably preferential under section 3 of that act, and having an unjust and unreasonable basis and being too high within the meaning of the Hoch-Smith resolution. The order was made July 20, 1927, and was changed by the commission in some particulars November 14, of that year. Originally it was to be effective October 10, 1927, but the commission extended the time to January 10, 1928. The railroad companies in their bill and on appeal had challenged the validity of the order upon the ground, among others, that the commission based it upon the joint resolution and a construction thereof which is inadmissible.

After the statement of the case and quotations of sections 1, 3 and 15 of the interstate commerce act and the joint resolution, the text of the opinion follows:

Text of the Court's Opinion

The original and supplemental opinions of the commission show quite plainly that the commission based the order entirely upon the joint resolution. It is said in the opinions that "the joint resolution was primarily relied upon" by the complainant; that while a violation of §3(1) of the Interstate Commerce Act was alleged in the complaint "no great reliance was placed upon that allegation"; that the "primary issue to be determined" was whether the existing rates were in accord with the resolution; that the resolution effected a change "in the basic law"; and that this change operated to eliminate a decision made June 25, 1925, in another proceeding between the same parties wherein the commission found the same rates neither unreasonable nor unduly preferential and sustained them as lawful rates, 100 I.C.C. 79. True, in both the original and supplemental opinions it is said that the existing rates are unreasonable, but the opinions taken as a whole show that this means the rates were deemed unreasonable under the joint resolution when construed as the commission construed it, and not that they were deemed unreasonable under § 1(5) or § 3(1) of the Interstate Commerce Act. Throughout the opinions it is manifest that the commission was testing the reasonableness and validity of the rates by considerations not applicable under those sections but believed by it to have been brought into the problem by the resolution.

The joint resolution is the outgrowth of several measures proposed in Congress but not adopted. Some of the measures may have been designated by their proposers to make real changes in existing laws relating to transportation rates. But they are not before us. The measure that is before us is the joint resolution which emerged from the legislative deliberations and proceedings. It is brought here to the end that we may determine its proper construction, which of course is to be done by applying to it the rules applicable to legislation in general.

The question presented is whether the resolution changes the substantive provisions of existing laws relating to transportation rates, and particularly whether rates which would be lawful under those laws are made unlawful by it.

The resolution is in three paragraphs. The first declares it to be a true policy in rate making that the conditions which at any given time prevail in the several industries "should be considered" in so far as it is "legally possible" to do so, to the end that commodities may move freely. This policy is not new. In rate making under existing laws it has been recognized that conditions in a particular industry may and should be considered along with other factors in fixing rates for that industry and in determining their reasonableness; and it also has been recognized that so far as can be done with due regard for the interests affected rates should be such as will permit the commodities to which they relate to move freely in the channels of commerce.

The second paragraph is devoted chiefly to requiring the Commission to proceed along stated lines for the purpose of securing prompt observance of existing laws, such as §§ 1(5) and 3(1) of the Interstate Commerce Act, requiring that all rates be just and reasonable and prohibiting all undue preferences and unjust discriminations, whether relating to shippers, commodities, classes of traffic or localities. The only substantive provision in the paragraph is one declaring that in the adjustment of rates the factors to be considered shall include (a) the general and comparative levels in market value of the various classes and kinds of commodities as indicated over a reasonable period of years, (b) a natural and proper development of the country as a whole, and (c) the maintenance of an adequate system of transportation.

These matters have all been regarded as factors requiring consideration under existing laws. The prohibition in Section 3(1) of the Interstate Commerce Act of any undue preference of one locality over another always has been treated as intended to prevent the use of rates as a means of promoting the artificial development of one locality to the detriment of another. And what is said about the maintenance of an adequate system of transportation is but a reiteration of provisions embodied in existing laws.

The third paragraph was construed by the commission as making a change "in the basic law," as placing agricultural products in a "most favored" class, and as justifying a reduction in the rates on deciduous fruits moving from California to eastern points, notwithstanding most of the carriers "have not as yet made the fair return" for which Section 15a of the Interstate Commerce Act makes provision as a means of securing the maintenance of an adequate transportation system. Indeed, it is apparent from the commission's opinions that it regarded this paragraph as requiring it to condemn the existing rates as unreasonable and unlawful, although had they been considered independently of the paragraph, they must have been upheld as reasonable and lawful under the applicable sections, 1(5) and 3(1), of the existing law.

We are of opinion that the commission's construction cannot be supported. The paragraph does not purport to make any change in the existing law, but on the contrary requires that that law be given effect. Nor does it purport to make unlawful any rate which under the existing law is a lawful rate, but on the contrary leaves the validity of the rate to be tested by that law.

The paragraph requires only that "lawful changes" in the rate structure be made; and we find in it no sanction for any other change. Unless the paragraph can be said to give its own definition of a lawful change, reference must be had to Section 15, par. (1) of the existing law which shows under what conditions and how a lawful change of rate may be effected by the commission.

The commission stresses the concluding words in the same sentence with "lawful changes" and evidently regards them as qualifying the natural import of the latter and in effect specifying a new and reduced scale to be applied in rate making. The words stressed are, "at the lowest possible lawful rates compatible with the maintenance of adequate transportation service."

Considering the connection in which these words are brought into the sentence we think they fall much short of supporting the construction adopted by the commission. They are more in the nature of a hopeful characterization of an object deemed desirable if, and in so far as, it may be attainable, than of a rule intended to control rate making. See *United States* v. *New York Central R. R. Co.*, 263 U.S. 603. Of course they should not lightly be disregarded. Neither should they lightly be accepted as overturning positive and unambiguous provisions constituting part of a system of laws reflecting a settled legislative policy, such as the Interstate Commerce Act. If they mean no more than that the depressed condition of the industry is to be given such consideration as may be reasonable considering the nature and cost of the transportation service and the need for maintaining an adequate transportation system they work no change in the existing law. But if they mean more and are intended to require that rates be reduced to some uncertain level below that standard they give rise to a serious question respecting the constitutional validity of the paragraph of which they are a part. See *Northern Pacific R. R. Co.* v. *North Dakota*, 236 U.S. 585, 595; *Norfolk & Western Ry. Co.* v. *West Virginia*, 236 U.S. 605; 608. By reason of their uncertain meaning, *United States* v. *Barnes*, 222 U.S. 513, 520, and of the constitutional question which would be raised if they were taken as the commission thinks they should be taken, *Harriman* v. *Interstate Commerce Commission*, 211 U.S. 407, 422, we think they must be held to no substantial change in the meaning or operation of Sections 1(5), 3(1) and 15, par. (1) of the existing law.

Our conclusion is that the order of the commission was based upon an erroneous construction of the joint resolution, and therefore should have been set aside by the court below.

This decision apparently may require a reconsideration by the commission of several decisions in which it had reduced agricultural rates under the joint resolution although in most such cases the commission also gave other grounds for its action.

Many important cases now pending before the commission as parts of its general rate structure investigation, Docket No. 17000, probably also will have to be considered in the light of the Supreme Court's opinion, before the decisions are made public. Although the proposed reports of the examiners in some of the more important cases contemplate a general revision on a mileage-scale basis, designed to effect a more equitable adjustment of rates, the question as to whether the resolution required a lower level of rates for agriculture than would otherwise have been held reasonable entered into the arguments before the commission in some of the cases in relation to the general level of the proposed scales.

The general investigation was ordered by the commission in 1926 and it has now been divided into 14 parts, covering class rates and particular commodities. Two final decisions have been rendered, involving iron and steel rates in Official Classification territory, Part 6, and sand and gravel rates in the Southwest, Part 11, and as to most of the other parts proposed reports have been made public and have been made the subject of argument before the commission. Part 7 involving rates on grain and grain products throughout the western district, was argued before the commission for three weeks last July and a decision had been expected shortly.

The court decision does not mention the general investigation required by the second paragraph of the resolution although it says that the various factors to which the commission is directed to give "due regard" have all "been regarded as factors requiring consideration under existing laws."

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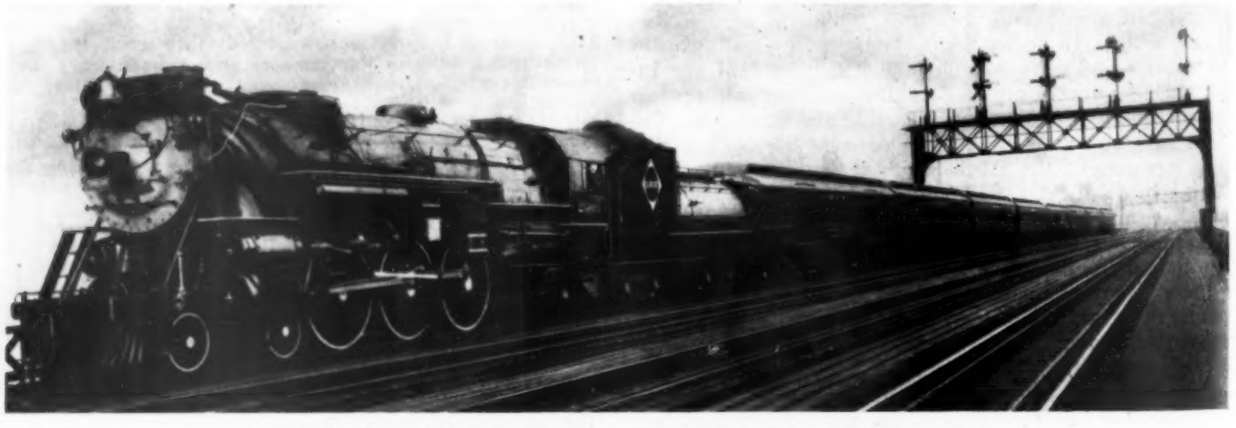


The Erie Limited, Which Celebrated the First Anniversary of its Initial Trip Between New York and Chicago on June 2

Illinois Central's 190,000,000-Gal. Reservoir at Princeton, Ky.

Water Supply Problems Are Varied

Magnitude and diversity of tasks confronting railway engineers are seldom appreciated

THE task of providing a water supply for a modern railway is no longer confined to that of insuring that an adequate quantity is available. Rather it is becoming more generally realized that this water must be naturally suitable for boiler use or must be treated to make it so. More recently, public health authorities are requiring that this water shall also be safe for drinking purposes and that those supplies provided for patrons and employees shall be so handled as to avoid danger of contamination. These and other problems arising in the routine work of a modern railway water service department formed the basis for the program of the twenty-second annual convention of the Illinois Section of the American Water Works Association in Chicago on April 23.

Annual Consumption

The railways of the United States consume 500 billion gallons of water annually. Of this amount, approximately 80 per cent is used by locomotives, 5 per cent by power plants and 15 per cent for building supplies and miscellaneous purposes. More than 18,000 water stations with necessary tanks, pumping equipment and various sources of supply produce and deliver this water where it is needed. The estimated value of railway water service facilities in the United States is approximately $400,000,000 and the annual cost of their operation and maintenance is $35,000,000.

This measure of the magnitude of railway supply operations was presented by J. P. Hanley, inspector of water service, Illinois Central. Elaborating on Mr. Hanley's figures, E. M. Grime, engineer of water service, Northern Pacific, arrived at 16 cents as the average cost per 1,000 gal. of water delivered, his analysis being as follows:

"The average cost of the 18,000 water stations required to serve locomotives is $22,200 and the average annual cost of operation and maintenance amounts to 7 cents per 1,000 gal. of water produced. If we add to this a fair interest charge on the cost of the investment, and also an item of 5 per cent to cover depreciation and obsolescence, we have 16 cents as the average total cost per 1,000 gal. of water delivered to locomotives."

Should Water be Purchased?

Indicative of the diversity of water service problems was the discussion of the relative advantage of purchasing water—primarily from municipalities—and of providing and operating private supplies. According to Mr. Hanley, local supplies should be considered in the order of preference given in the following outline of procedure for the study of available sources of water.

1. City or other purchasable supply—Is such water of good quality for boiler use? Is the cost reasonable? Is the plant adequate to supply the added demand?
2. Surface supplies—creeks, rivers, lakes. If none is available can an impounding reservoir be constructed at reasonable cost?
3. Ground Water—Study existing wells if any exist, obtain all available data in possession of the state water survey division. Drill small test wells if necessary to supplement existing information or to obtain new information.
4. After a supply or supplies have been found in adequate quantity, analyze samples from each in the railway laboratory to ascertain their chemical characteristics.
5. Plat all information and make comparative estimates of cost covering each source considered, and submit these with recommendations to the management for action.

Commenting on these recommendations, J. R. Hickox, hydraulic engineer, Chicago, Burlington & Quincy, favored purchase from municipalities for the following reasons:

"Towns are getting better supplies than formerly and often have as good water as can be had in that location. It often is quite a help to the water department of a small town to get the additional revenue and it promotes a spirit of co-operation. The railroad should have safe drinking water for its employees, even at points where none is put on trains. Buying from the town simplifies this and if the entire supply can be bought it saves many complications."

However, he pointed to a difficulty that may attend the use of purchased water which must be taken into account. "Chemical treatment of water by municipalities," he said, "does not usually produce a water suitable for boiler use, and sometimes the irregularities in the city's treatment are more difficult to follow in subsequent treatment by the railway than the irregularities of the natural water."

Further Improvements Necessary

Emphasizing the necessity for still further improvement in the quality of water, particularly from the standpoint of its fitness for domestic consumption, Mr. Grime drew a parallel between contrasting objectives which have characterized efforts to improve municipal and railway water supplies—low bacterial content in the former and low mineral content in the latter. Further improvements of these two classes of supplies, in his opinion, will result from efforts to obtain more nearly the same qualities in city and railroad water. An abstract of his remarks follows:

"It is but a few short years since sanitation advanced to the point where water-borne diseases could no longer be tolerated, so that today no city of any consequence even considers furnishing a water that is not absolutely pure as far as a harmful bacterial content is concerned. Strange as it may seem, water which is now considered suitable for human consumption and other domestic purposes, is frequently not suitable for locomotive use until the incrusting salts it contains have been reduced or removed. However, it may not be at all unreasonable to predict that within a comparatively few years the present soap-destroying, skin-irritating, fabric-damaging hard waters in use in so many cities will be scientifically treated and softened to the end that they will be entirely suitable for domestic uses of all kinds.

"These changes that have been found desirable in domestic water supplies for the purpose of insuring the health and comfort of the people, have had a counterpart in the railway field where the increase in the efficiency of the railways' traveling power plants is already requiring the use of a water that is not only approaching zero hardness but is also as low as feasible in soluble salts. If the steam locomotive is to maintain its progress and not be outstripped by the Diesel or electric locomotive, it must have water practically free from precipitating salts and also low in soluble salts."

Three Methods of Preventing Pitting

Continuing this thought, C. H. Koyle, engineer of water service, of the Chicago, Milwaukee, St. Paul & Pacific, outlined the result of his extended investigation of corrosion and of means for its prevention. "As far back as 1903," said Mr. Koyle, "the fundamental reactions of under-water corrosion were worked out and announced by the research chemists of the Massachusetts Institute of Technology, and by 1910 these statements had been examined and substantiated by many able chemists. To be as brief as possible, the statement of the chemists was that the purest iron will dissolve to a small extent in the purest water, that the atoms of iron which leave a flue in the process of making a pit dissolve in the surrounding water and each atom carries with it its electric charge; that no electrically-charged atom (ion) can enter water in solution without expelling from solution at some other point an electrically charged ion of weaker solution tendency; that the only substance in solution in ordinary water which has a lower solution tendency than iron is hydrogen, and that therefore iron can dissolve in water only when it can force out a corresponding number of electrically charged hydrogen ions.

Caustic Soda

"It is easy to see that if iron cannot dissolve in water unless it can expel hydrogen ions, all we have to do to stop pitting is to prevent the escape of hydrogen ions. It is also easy to see that if we can rid the water of hydrogen ions by some inexpensive method, *that* is the simplest means of preventing corrosion, because if there are no hydrogen ions in the water there is nothing for the iron to push out, and the iron cannot dissolve. Now it happens that the presence of caustic soda in water prevents to that extent the presence of hydrogen ions, and the amount of caustic soda necessary is easily within the limits that can be carried in boiler water that is soft. It seldom exceeds 15 grains per gallon as the water goes to the boiler, and seldom exceeds 80 grains per gallon as the water becomes concentrated by continued evaporation. This method has practically eliminated pitting on the Great Northern. Of course, it costs something to add 15 grains per gallon of caustic soda to boiler water but it is cheaper than to repair the ravages of pitting.

Metallic Arsenic

"When the hydrogen ions are pushed out of solution they gather in the form of a film on that part of the iron surface which is not pitting, each hydrogen ion having given up its electric charge to the ion merely by touching it, and if there is any method of preventing the hydrogen ions from giving up their electric charge they will remain ions and cannot be pushed out of solution in the water. The chemical engineer of the Chicago & Alton devised an ingenious method of doing this. He coats the inside of the boiler with metallic arsenic whose electric properties are such that hydrogen ions cannot give up their electric charge to it, and therefore compells them to remain in the water as ions, and the iron cannot dissolve because it cannot push them out. This method has been in use on the Chicago & Alton for four years, and is now being extended to other roads. This method also costs about $100 per locomotive per year, but that is cheaper than pitting.

Open Feedwater Heaters

"The third method, which I devised and demonstrated, is based on the fact that the hydrogen ions, expelled from the water by the dissolving iron, give up their electric charge to the iron (becoming thus mere molecular hydrogen), and cling to the iron because they are too small to float away. Thus, they form a gaseous film which will prevent further pitting by preventing the further escape of hydrogen ions. But this protection does not last, because the oxygen which is dissolved in all waters which have been exposed to the air combines chemically with the hydrogen and destroys the film. Therefore, pitting may be prevented by the extraction of this dissolved oxygen before the water enters the boiler. This is done with the aid of an open feedwater heater so constructed that the cold water from the engine tank pumped into one side of the cast iron box in a fine spray to meet the exhaust steam from the cylinders, becomes heated thereby to a temperature of about 200 deg. F. and, therefore, gives up its dissolved air which escapes through a ½-in. vent pipe which rises from the top of the box.

"This method has been given a four years' test on the

Sioux City division of the Chicago, Milwaukee, St. Paul & Pacific, where pitting had been most severe and the life of a set of flues using natural waters averaged less than one year, and with treated waters about two years. The engine equipped with the open feedwater heater had not developed a pit at the end of four years."

Sanitary Control

One of the duties which is becoming of more importance each year for the railroad water engineers, according to a paper by R. E. Coughlan, is to provide potable waters for the use of passengers and employees. The federal authorities, he said, are maintaining a close supervision of the water supplied for drinking purposes on passenger trains, and each state has certain requirements with which it is necessary for all railroads to comply when operating within its boundaries.

"To meet these requirements," continued Mr. Coughlan, "and conduct a thorough study of sanitation as applied to drinking water, the Committee on Water Service and Sanitation of the American Railway Engineering Association co-operates closely with the Joint Committee on Railway Sanitation composed of representatives from the Medical and Surgical Section, the Mechanical Division and the Engineering Section of the American Railway Association, and also the Public Health Service. This joint committee is preparing a manual of recommended practices for the guidance of the railroad with the thought that the improvements thus effected will forestall the issuance of arbitrary rulings on these matters by federal, state or local health authorities.

To Provide Safe Water

"To provide safe water on passenger coaches, it is not only necessary to know that the original supply is safe and approved by the health authorities, but it is also imperative to guard against contamination in transferring it from the supply to the cars. The hydrants should be placed in a pit or box, the top of which is flush with the platform or surface of the ground. Valves of the quick-opening type should be used and hose should be provided with connections that permit the hose to be quickly attached and removed. The valves should be self-draining and non-freezing or adequately frost-proofed. Adequate drainage should be provided to carry away surface waste, as well as the water drained from the hydrants.

"The hose for the delivery of water to the cars should be used for that purpose only. It should be thoroughly flushed out before each use. When not in use, it should not be permitted to lie on the ground, unless the nozzle is protected from contamination, and should be stored in a suitable receptacle. In moving the hose from one locality to the other, the workman should carry it so that the ends will not be dragging on the ground. Extreme care should be exercised to prevent the drinking water hose from being used for washing cars, toilets or other equipment. The hose should have a smooth nozzle to minimize the adherence of dirt, with a special device to prevent the nozzle from touching the ground. The inlet conections on the cars should be so located that there is no possibility of contamination from waste discharged from the cars.

"The men employed in the duty of watering cars must be rigidly instructed. Personal cleanliness should be required and precautions must be taken to insure that none is a carrier of typhoid fever or other diseases.

"Where buckets are employed, these buckets should have spouts and complete covers, and should be used only for the purpose of watering cars. Special lockers, or boxes, should be provided for the sole purpose of storing these buckets when not in use. It is, also, desirable to keep these buckets in a separate compartment from the ice when a cart or truck is used for the convenient transportation of such equipment from car to car.

"It is essential that all supervisory officers be thoroughly informed as to the sanitary methods of handling the water supplied to cars, as the general rank and file of coach-yard employees are not in a position to know the most sanitary methods to be employed. As the watering of cars enroute must usually be done quickly to avoid delays to trains, it is important that the foreman in charge of such work be ever alert to prevent careless practices that may result in contamination."

Extra Fare Hearings Close

FINAL hearings in connection with the Interstate Commerce Commission's investigation into extra fares on passenger trains were held before Examiner M. L. Boat at New York on June 3. The case is docketed as I.C.C. 22735, while the general inquiry also includes Fourth Section Application 13871, filed by agents for certain eastern lines, asking release from the aggregate of intermediate fares provision of the fourth section of the Interstate Commerce Act. Previous hearings were held at Chicago in February and were reported in the *Railway Age* of February 22, page 481.

The only extended carrier testimony at New York was presented by the New York, New Haven & Hartford, although the Pennsylvania and the New York Central each introduced an exhibit to supplement previous testimony given by their witnesses at Chicago. The remainder of the day was consumed by organization and chamber of commerce representatives, each of whom read into the record a statement of the position taken by the body which he represented in the matters under review. In the main there was no opposition to the principle of the extra fare or the character of the service rendered on extra fare trains. Such complaint as was registered alleged discrimination between communities in the assessing of the extra charges, the principal complainant in this regard being the Chicago Association of Commerce.

The session opened with the testimony of W. G. Adams, a representative of the National Council of Traveling Salesmen Associations of America. Mr. Adams read a long prepared statement which held, among other things, that the present cost of railway travel is driving patronage to other forms of transportation and that the extra fare aggravates this loss of passenger revenue. The situation resulting from the decline in passenger revenue, this witness held in closing, cannot be met by increased charges. He believed that railway passenger revenues can only be improved by the introduction of "modern merchandising methods" involving "mass business at a lower rate level."

Evidence offered by the New Haven was presented through the testimony of three witnesses: F. C. Coley, passenger traffic manager; A. H. Fairfield, operating and commerce assistant, and W. A. Gordon, special as-

sistant to the comptroller. Mr. Coley outlined the history of extra fare trains on the New Haven and their development up to the present time when the road is operating four extra fare trains in each direction between New York and Boston, one being the "Senator," a through train to and from Washington. The others are: "The Merchants Limited," the "Knickerbocker" and the "Yankee Clipper." The extra fare on the Merchants and the Knickerbocker is $1.20 and on the Yankee Clipper $2.50; the former two make the run in five hours and the latter in 4 hrs. 45 min. The extra fare between New York and Boston on the Senator is $1.50. Mr. Coley explained in connection with the Yankee Clipper's $2.50 charge that in order to maintain schedules it is necessary to hold this train down to seven cars which requirement results in a larger percentage of non-revenue space on the train. The comparison is: Yankee Clipper, 19.5 per cent; Knickerbocker, 8.6 per cent. Net revenues (collections less refunds for failure to maintain schedules) received by the New Haven from extra fares has grown from $238,923 in 1912 to $367,692 in 1927 and $403,170 in 1929.

Mr. Coley next introduced a series of exhibits to support his statement that there is no prejudice or discrimination in connection with the extra fare train service on the New Haven. He cited the numerous non-extra fare trains and pointed out that no patron need ride on an extra fare train who desires accommodations at the regular rates.

Mr. Fairfield testified as to the operating characteristics of the New Haven's shore line over which the extra fare trains are operated and also presented statistics on the cost of keeping this route to the standard of maintenance required for high speed operations. Mr. Gordan followed with exhibits showing cost and traffic data bearing on the operation of the extra fare trains.

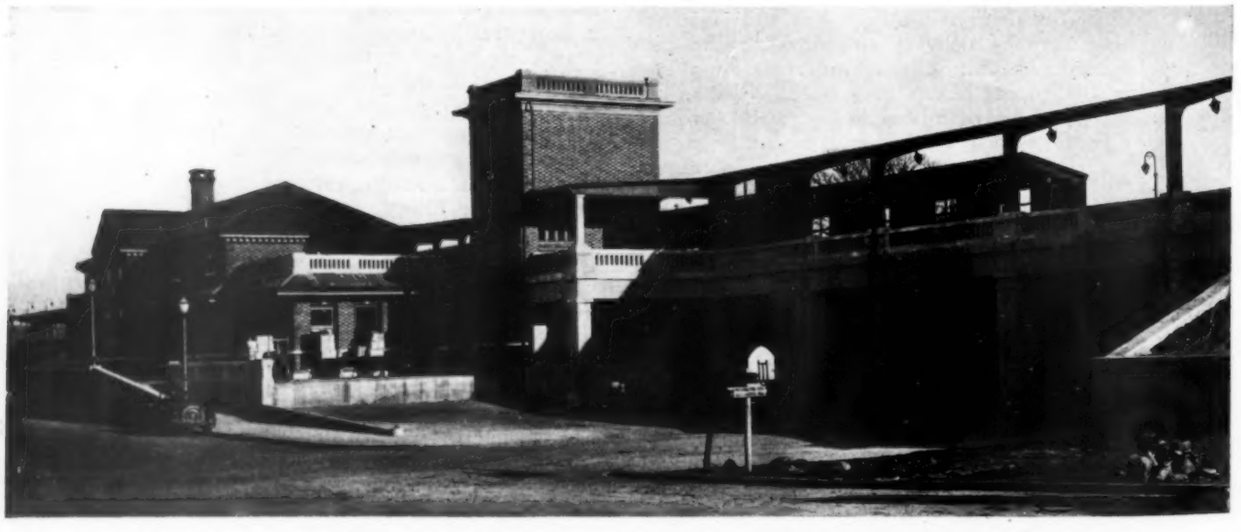
The representative of the Chicago Association of Commerce, C. E. Hochstedler, presented a comprehensive series of exhibits designed in the main to compare extra fares from Chicago to Eastern points with those in effect from St. Louis to the same points. This compilation arranged all important trains from Chicago or St. Louis to Eastern cities in the order of their average speed in miles per hour, based on the short line distance. It indicated that the fastest trains operate at an average speed of 45.75 miles per hour between St. Louis and New York while the fastest time from Chicago is at an average speed of 45.41 miles per hour. The witness then pointed out that whereas St. Louis has a $6.00 extra fare on the 45.75 miles per hour trains, an extra fare of $9.60 is charged on the 45.41 miles per hour trains between Chicago and New York. Continuing, Mr. Hochstedler called attention to the fact that a non-extra-fare-train is operating between St. Louis and New York at an average speed of 37.80 miles per hour whereas a traveler from Chicago to New York must accept an average speed of 32.63 miles per hour if he wishes to patronize a non-extra-fare-train.

With subsequent testimony and exhibits designed to support the same contention Mr. Hochstedler held that Chicago is discriminated against in favor of St. Louis in the matter of extra fares. The Chicago Association of Commerce, he added, is not opposed to extra fares so long as they conform to sections 1 and 3 of the Transportation Act, i.e., so long as they are reasonable and do not produce discrimination. The association does not suggest that St. Louis extra fares be increased or that those at Chicago be reduced; its complaint was directed to the alleged inequalities in the situation but the correction of such alleged inequalities the association was willing to leave to the carriers.

C. J. Fagg, representing the Newark Chamber of Commerce, followed. His organization, he said, does not seek the elimination of extra fares but does complain of the situation whereby extra fares apply to Newark and do not apply to the competitive points of Baltimore and Washington. He thought that extra fares should apply to these points which he held were receiving service comparable to that afforded on extra fare trains. "When a service is rendered those who receive it should pay for it," he concluded.

Representatives of the chambers of commerce of Detroit, Mich., Toledo, Ohio, and Kalamazoo, Mich., went on record as favoring a continuance of the existing situation with the first of these presenting brief testimony and an exhibit on the fourth section feature of the inquiry. The hearing then closed and Examiner Boat announced that counsel would have until August 4 to file briefs.

* * * *



Street Level View of the Richmond, Fredericksburg & Potomac Passenger Station at Fredericksburg, Va.

Comfort Characterizes the New York Central's Fast Coach Trains

Boosting Coach Travel Has Its Limitations

Results of operation of three de luxe trains on the New York Central

THE New York Central Lines operate de luxe day coach trains in each direction daily between New York and Buffalo, and between Chicago and Niagara Falls, and formerly operated a similar train between Detroit and Cincinnati. A careful study has been made of the results, not only as to these particular trains, but as to the effect of their operation upon other trains between the same points, and as a result of which the N. Y. C. has arrived at some interesting conclusions.

The first of the conclusions reached by the passenger traffic officers of this system is that the possibilities of stimulating coach travel appear to have definite limitations. The experience obtained with these three trains indicates that, where latent traffic exists, it can be attracted to the railway by well-directed efforts, but that where such traffic is not available, no amount of artificial stimulation can create it.

The passenger traffic department has had a large measure of success in developing more exclusive passenger traffic, and the possibilities along these lines have been found to be fairly elastic. A recent illustration was the establishment of the fleet of new 20-hr. trains between New York and Chicago. For many years the Twentieth Century Limited was the New York Central's only 20-hr. train between New York and Chicago, operating an average of slightly more than three sections in each direction daily. Last fall the number of 20-hr. trains was increased from two to nine. Amazing as it may seem, all the new trains have been liberally patronized without appearing to draw from the Twentieth Century, which continues to run nearly as heavily filled as before. Passengers on this and on other limited trains pay the extra fares at established rates, showing that apparently price does not enter into the calculations of the prospective passenger. Rather, what he wants is assurance of the best in service, including up-to-date equipment, courteous attendance and speed. Accordingly, these points have been stressed by the New York Central management.

De Luxe Coach Train Established

In the light of this experience, the conclusion seemed warranted that a like policy might produce similar results if applied to day coach traffic. Accordingly, on June 24, 1928, the "Day Coach De Luxe," trains Nos. 1 and 2, was placed in service between New York and Buffalo, making the run of 438 miles in 10 hr. and 20 min. In order to "hit all the high spots" this train made no fewer than 18 stops in each direction. To make the time, therefore, it was necessary to operate at particularly high speed between stations, the train averaging a higher speed while traveling than its companion train, the Empire State Express, which long ago earned a reputation for fast travel.

Speed was one of the selling points offered to the traveling public in the new train. Another selling point was new equipment throughout, representing the highest development of the car builder's art. Its chief innovation was an observation car with 54 movable wicker chairs available to passengers without extra charge. Coaches, seating 82 persons each, were of a new type, and equipped with individual bucket seats. The coaches were decorated in brown with walnut grain finish and brown carpet, to harmonize with the observation car. The coaches were provided with hot and

cold water in the wash rooms, the windows were screened and porters were in attendance. The equipment included a combination baggage and smoking car and a dining car carried through between terminals.

That this train has been successful is shown by the fact that the patronage of train No. 1 has averaged 347 passengers in the summer and 353 passengers in the winter. Likewise, in the reverse direction, No. 2 has averaged 337 passengers per train in the winter and 371 passengers per train in summer. As with the new 20-hr. trains, the Day Coach De Luxe appears to have created an entirely new patronage for itself without detracting from the coach business of the Empire State Express, which carries as large a volume of business as before the Day Coach De Luxe was established. The Empire State Express, it should be remembered, carries both day coaches and parlor cars and is operated occasionally in two sections to handle the traffic. Neither does this newly created coach travel seem to be made up of any passengers drawn from sleeping cars, for Pullman traffic between New York and Buffalo and intermediate points has continued to increase steadily.

Further Experiments Made

The success of the Day Coach De Luxe seemed to invite further experiments along the same lines. Accordingly, on April 28, 1929, the "Motor Queen" was established as a coach train between Cincinnati and Detroit, over the Big Four and Michigan Central, making the run between the two cities in 6 hr. and 10 min. The Motor-Queen left Cincinnati at 3:30 p. m., arriving at Detroit at 9:40 p. m. In the opposite direction, it left Detroit at 3:05 p. m., arriving at Cincinnati at 9:15 p. m.

All the attractions offered by the Day Coach De Luxe were faithfully copied—brand new equipment, individual seats of the bucket type, handsome upholstery and interior finish, observation car with seats without additional charge, dining car all the way through, combination smoking car, high speed between stations, and porters in attendance.

In addition to all this, the new trains were given an exterior finish in a rich brown with strips of fawn color along the middle of the sides and around the window casements. It was the first time in several years that regularly scheduled trains of the New York Central Lines were painted in other than the standard color. The effect was both rich and dignified. If there was anything in the contention that color had power to charm, the Motor-Queen should have been an instantaneous hit. Instead, all the inducements that were offered did not attract enough business to make the train profitable, and it was withdrawn on December 7, 1929.

Chicago-Niagara Falls Train

On the same day that this new de luxe coach train between Detroit and Cincinnati was placed in service a similar train was put on between Chicago and Niagara Falls and Buffalo making the run of 535 miles in 12 hr. and 30 min. This new train was christened "The Niagara Falls De Luxe Special." It leaves Chicago at 8 a. m., arriving at Niagara Falls 7:45 p. m., and at Buffalo at 8:30 p. m. Westbound it leaves Buffalo at 10 a.m., and Niagara Falls at 10:45 a.m., and arrives in Chicago at 8:30 p.m. It has all the attractions offered by the Day Coach De Luxe and the Motor-Queen in speed and service plus the attractive color scheme of the Motor-Queen. It is still in service, and is at present attracting enough traffic to justify ats continuance.

The net conclusion to be drawn from these New York Central experiments appears to be that, in areas of dense traffic, efforts to stimulate coach travel will produce successful results just as such efforts do in more exclusive travel; and that, on the other hand, no amount of artificial stimulation will develop business where there is no business to be developed. The New York Central management has not experimented with reduced rates as an inducement to increase coach travel.

Hearings on Fourth Section Bill

WASHINGTON, D. C.

A SUB-COMMITTEE of the Senate committee on interstate commerce concluded on June 3 a series of hearings on the Pittman bill to amend the fourth section of the interstate commerce act to prohibit departures from the long-and-short-haul rule on account of water competition through the Panama canal, which is being supported by the intercoastal steamship lines operating through the canal and by the Intermediate Rate Association, representing shippers in the intermountain section. Most of the witnesses from other parts of the country who appeared have testified in opposition to the bill particularly those from the middle west who desire to have the railways allowed to make rates which will enable them to compete with shippers located nearer to the Atlantic seaboard who have been able to utilize the canal route. Representatives of the southwestern transcontinental roads, the Western Trunk Line roads and of the southern roads have also appeared in opposition to the bill. The subcommittee consists of Senator Hastings, of Delaware, and Senator Pittman, of Nevada, who will report to the full committee.

Most of the arguments used at the hearing have been those that have been repeated over and over again in connection with earlier efforts to change the long-and-short-haul rule, except that the controversy was limited mainly to the Panama canal situation. Although the railroads have had no fourth section relief on this traffic since 1918, the Southern Pacific has filed with the Interstate Commerce Commission an application for authority to reduce rates on a number of commodities via its water and rail route between New York and the Pacific coast and the representatives of other roads protested vigorously against the proposal to bar them from even applying to the commission for fourth-section relief. On the other hand the representatives of the steamship lines and the intermountain shippers said they desired to have the question settled so as to prevent the necessity for further proceedings before the commission.

Proposed Amendment Discriminatory

Dr. C. S. Duncan, economist for the Association of Railway Executives, said that the proposed amendment would be discriminatory because it selects only one among many similar kinds of situations and declares that for this one situation no relief shall be granted the carriers from a rigid fourth section rule.

Paul P. Hastings, general freight agent of the Atchison, Topeka & Santa Fe, pointed out that the Pacific coast traffic, including the import and export business, was the principal reason justifying the building of the transcontinental railroads and said that to prohibit com-

petition for it would injure the roads and permanently divert business from the central states and middle west, via the Atlantic seaboard, without helping the people in the intermountain states. The transportation of competitive freight by the canal, he said, helps no one along the lines of the railways, and he referred to the joining by the intermountain merchants and jobbers with the intercoastal steamship lines in their efforts to obtain a monopoly of the traffic to and from the Pacific coast as "a strange alliance," because whatever injury had resulted to the intermountain merchants in competing with coast merchants had been the result of the rates made and freight carried by the steamship lines. Mr. Hastings said the law contains ample safeguards against the destruction of water competition by the railroads and that when the railroads had fourth section relief and there was service by boats through the Panama canal the water competition through the canal was increasing rapidly.

Asserting that comparisons offered by proponents of the bill between the canal tonnage and the total traffic of the western roads or the transcontinental lines were valueless, Mr. Hastings said that comparisons should be made of tonnage from and to the same territories and that in 1929 the canal lines carried 2,119,735 net tons of freight from the north Atlantic ports to California alone. In the same year the Santa Fe hauled to California from the states of New York, Pennsylvania and West Virginia and states east thereof from New England to Virginia, only 42,754 tons of carload freight. When Senator Pittman indicated he believed that if the transcontinental lines obtained fourth section relief they would get most of the business, Mr. Hastings said he thought they would not get more than half of it.

Railroads Want Only Square Deal

Alfred P. Thom, general counsel of the Association of Railway Executives made the closing statement for the railways, raising particularly the question of the soundness of the governmental policy involved in the proposal to remove the discretion of the commission as to one particular traffic situation and one section of the country. He also said that it is not a justifiable public policy to go further in the direction of reducing the volume of traffic available to the railways by giving a monopoly to one form of transportation. In a colloquy with Senator Pittman who said he wanted to put an end to the agitation of the subject once and for all, Mr. Thom said that the bill indicated a fear that the railways would be able to show to the commission in a particular case that fourth section relief is economically justified and proposed to prevent them, regardless of changes in conditions, from making such a showing to the commission.

When Senator Hastings asked if the passage of the bill would make it possible for the steamship lines to agree to advance their rates 20 per cent, Mr. Thom replied that there is no governmental control of such a situation, as the commission has no jurisdiction over the canal rates. Senator Pittman insisted that the competition of the tramp lines would prevent such an agreement and that that is the reason why Congress has left the water rates unregulated, but Mr. Thom pointed out that the steamship lines have been able to agree on rates in the past. Mr. Thom also took the position that it could not possibly injure the intermountain shippers if the railways were able to participate in the Pacific coast traffic and that it would injure them to prevent the railways from earning net revenue to such an extent as to require an increased burden on other traffic.

When Senator Hastings asked if there is any basis for the hope that if the bill is passed the railways will reduce their intermediate rates so as to be able to reduce their coast rates, Mr. Thom said he believed that was the hope and expectation of the intermountain territory but that if the railways should do so and receive less revenue as a result the loss would have to be borne by some part of the country. The railroads, he said, are in no position to stand destructive competition fostered by law or to be excluded by law from any legitimate field of traffic, and they are only asking to be allowed to compete with another form of transportation under government regulation.

Senator Pittman argued that the railways cannot take traffic away from the canal lines without seriously damaging the latter to obtain a relatively slight benefit for the railways. Mr. Thom asked why the commission should not be allowed to decide the extent to which that should be done, instead of having it decided in a political atmosphere. Senator Pittman also took the position that the passage of the bill would not create a different situation from that which has existed for 12 years under the rulings of the commission, but J. R. Bell, commerce counsel of the Southern Pacific, said that the commission has never, since the passage of the transportation act, denied fourth section relief to the Sunset-Gulf route.

Mr. Thom filed for the record a statement by E. B. Boyd, chairman of the Western Trunk Line Committee, who said that while it is not contemplated by the all-rail carriers to meet from the central and middle west territories the rates from the Atlantic ports and immediately adjacent points, it is their desire to put into effect from middle west and central territories rates within reasonable limitations that would enable shippers in those territories to compete with others.

Whatever advantages the manufacturers, jobbers, and distributors on the Pacific Coast and at interior points immediately east may have over the jobbers in the intermountain territory because of the low water rates, he said, such advantages are not the creation of the transcontinental railroads.

"The water rates are there and the advantages will continue regardless of the railroads. No injury therefor would be done the intermountain shippers by the granting of the desired fourth section relief. It would enable the transcontinental roads to restore to their shippers in the Middle West and Central territories that equality of opportunity with their competitors in the east which for years they enjoyed but disrupted by the Interstate Commission's withdrawal in 1918 of the fourth section relief it had formally granted. As no harm to the intermountain jobbers would follow the granting of the relief sought by the railroads, the opposition of the interior jobbers is convincing that there is but little merit of fairness or unselfishness in their attitude. The Western Trunk Lines are in accord with the position of the transcontinental lines with respect to this fourth section relief.

An Amendment Suggested

W. H. Chandler, manager of the traffic bureau of the Merchants' Association of New York, submitted a substitute for the Pittman bill to enable the commission to authorize railways to meet water-competitive rates between ports where water competition actually exists but without applying reduced rates to points not actually served by water lines. He also objected to sugges-

tions offered during the hearing that the commission be given power over port-to-port rates of water lines.

W. S. McCarthy, president of the Intermediate Rate Association, made a rebuttal statement, saying that the experience of the past twelve years shows that the intermountain country cannot hope for stability unless the commission's discretion is curtailed by law. Frank Lyon, representing the canal lines, which he said operates 185 American-built ships, also urged a final settlement of the question, so that they may know whether when they succeed in building up traffic it is liable to be taken away later. He said that the only possible effect of allowing the railways fourth section relief would be a reduction in the number of ships using the canal and that if the commission is given power to reduce their traffic so that only 125 ships can stay in business it can reduce the fleet to 25.

Senator Hastings remarked that he was not impressed with the fear that the commission will allow the boat lines to be destroyed and that he could not see how the bill would help the intermountain shippers, while the only benefit to the merchant marine would be to open the opportunity to raise rates. Mr. Lyon said that the Southern Pacific application, while proposing specific rates, also includes a proposal that its rates be made specific percentages above the water rates in case they change. When Senator Hastings asked him if he had any doubt that the commission would try to be fair to the railroads, the boats and the public, Mr. Lyon said he had not but that the commission was inclined to be "railroad-minded," and that it could not allow rates which would give the roads any appreciable amount of traffic without having a serious effect on steamship lines.

* * *

The Bronze Plaque Awarded to the Union Pacific as Winner of Group A in the Safety Contest Conducted by the National Safety Council

Centennial of New England Roads

(Continued from page 1376)

road to reach that conclusion is a point on which this record throws no light.

The first rails laid weighed 35.3 lb. per yard and the chairs weighed 16.8 lb. each, but these rails were too light and the next ones were a little heavier; and it appears that the decision was soon reached that the rails ought to weigh at least 56 lb. per yard.

The whole cost of the road, as of October, 1835, (one track) was $1,039,105.10 to which was added about $62,000 for tracks to different mills in Lowell, for locomotives and cars and for stations in Lowell and Boston. It appears that the erection of a station in Boston was deferred for some months after the opening in order to see what style and size of building was needed.

It appears that the question of track capacity arose very early in the operation of the railroad. Working with only one track the merchandise trains had to travel as fast as those with passengers; therefore, the construction of a second track would allow "lower speed and thus decrease the cost of repairs" to rolling stock. By January 4, 1836, second track had been laid for five miles and rails provided for five miles more.

Accommodation Train Demanded

At a meeting of directors on January 14, 1836, petitions from citizens of Medford, Woburn, Stoneham and other towns between Lowell and Boston were received requesting that they be enabled to use the railroad. It would appear that Boston and Lowell were the only towns which thus far had been given much attention; and whether or not it would be worth while to run another train as an accommodation was a subject of protracted debate. If the original passenger trains were to be required to stop five minutes at each of four or five places, it would lengthen the run so as to "injure the reputation of the road." Some of the villages making these requests were a considerable distance from the line of the road. Already the trains were being stopped at Beers' Bridge, 10 miles from Boston, "for the purpose of examining wheels, etc." and any change would involve the question of establishing a new wood and water station. The directors finally decided that another engine and car should be provided, so that they could run an accommodation train.

At their meeting in January, 1837, the directors discussed the cost of the road, which had been much more than anticipated; but business had been good and it was "still confidently believed that there was no better piece of railroad in the world." At this date, only a year and a half from the opening, the record shows that because of delay in receiving cars, it had been impossible to convey all the merchandise that might have been taken.

DURING 1930, YUGOSLAVIAN RAILWAYS will obtain from Germany and Hungary, on war reparations accounts, 110 standard gage and four narrow gage (2 ft. 6 in.) locomotives; 1,100 standard gage gondola cars and 600 standard gage box cars, and 1,730 freight cars of various types for narrow gage lines, according to Department of Commerce reports.

FIRST AID SERVICE IN SMALL INDUSTRIAL PLANTS is the title of a pamphlet which has been issued by the Metropolitan Life Insurance Company, New York City, describing methods of organizing and administering a first-aid room in establishments which are not large enough to employ a physician. Full-page illustrations are given of typical first-aid rooms. An appendix contains a summary of state laws concerning first-aid requirements.

Protection of Railway Grade Crossings

Report adopted at third national conference on street and highway safety

A COMPREHENSIVE program of measures for the reduction of the number of accidents at railway grade crossings, requiring the co-operation of railways, public authorities and the users of the public highways, was recommended in the report of the Committee on Protection of Railway Grade Crossings and Highway Intersections which was adopted at the third National Conference on Street and Highway Safety, held in Washington on May 28, 29 and 30. William R. Dawes, vice-president of the Central Trust Company of Illinois, was chairman of the committee, and Dr. Julius H. Parmelee, director of the Bureau of Railway Economics, was secretary. W. J. Towne, chief engineer of the Chicago & North Western, chairman of the American Railway Association Committee on Grade Crossing Protection, was also a member of the committee and the recommendations of the A.R.A. committee were considered and to a large extent adopted in the preparation of the report.

Approximately 600 delegates, including representatives of the governments of nearly all the states and many of the large municipalities and civic and other organizations, among them many railway safety specialists, participated in the conference, which was called by Secretary R. P. Lamont, of the Department of Commerce.

A brief abstract of the committee report was published in the *Railway Age* of May 10, 1930, page 1137. It was pointed out that railway grade crossing accidents during the four years 1926-1929 have averaged 5,783 a year. Of this number 4,399 were motor vehicles struck by trains, 1,272 were cases in which automobiles ran into the side of locomotives or trains, while 110 involved occupants of other vehicles, or pedestrians. Accurate data as to grade crossing accidents on steam railroads and many electric railways are available, the report stated, but not as to types of protection sufficient to show which is best.

Reduction of physical hazards at grade crossings and highway intersections requires, the committee said, in addition to warnings and other protective measures, that there should be:

Reduction of Physical Hazards

(a) Practically level and smooth highway surface between the tracks or within the highway intersection and for at least 25 and preferably 50 feet on each side of the tracks or intersection; approach grades not exceeding 4 to 5 per cent; widening of the roadway at the crossing or intersection; avoidance of sharp highway turns and junctions within 250 feet of the crossing or intersection and of important highway intersections within at least 500 feet of the crossing if ultimate grade separation may be contemplated.

(b) Avoidance of standing of railroad cars, parked highway vehicles or other temporary obstacles, and removal of banks, trees, shrubs, standing crops, buildings, billboards or other permanent obstructions to give sufficient view of the tracks or cross road to enable traffic to pass safely under normal conditions of operation, or, if this be impracticable, then, under conditions of more cautious operation, proper indication by warning signs or other protective measures.

(c) Where artificial lighting of highways or grade crossings is economically practicable, special care should be taken to insure that the lights are so located as to illuminate the fixed signs without glare interfering with visibility from the point of view of the highway user. Consideration should also be given to visibility of rolling stock as affected by the color of paint used thereon and as illuminated by automobile headlights or street or highway lights at the grade crossing. Visibility from the side should also be provided for in the lighting systems on motor vehicles.

Standard Fixed Signs and Markings

To give warning of the proximity and character of a railway grade crossing at sufficient distance from the crossing to enable the driver of a vehicle to regulate its movement so as to be able to stop if necessary, and otherwise to determine before reaching the crossing whether he can cross in safety, the following standard signs and markings are recommended (see foot note):

(a) *Advance Warning Signs and Pavement Markings.*—At each highway approach to a railway grade crossing there should be erected not less than 200 feet (in cities not less than 100 feet) or more than 450 feet from the crossing a standard circular highway advance warning sign, illuminated or with reflecting letters, consisting of a black "RR" and cross on a yellow background.

As a supplementary advance warning of approach to railway grade crossings on hard surfaced, heavily traveled highways where rail traffic is fast or frequent, pavement markings should be employed, using the standard form approved by the American Association of State Highway Officials. On wide highways lane markings are also recommended. On three lane highways the two righthand lanes approaching the crossing should be marked; on highways of four or more lanes, all lanes to the right of the center line.

(b) *Speed Limit or Stop Signs and Supplementary Slow Signs.*—In addition, at a point nearer the crossing, there should be erected a speed limit sign or a stop sign depending on the following conditions:

(i) Outside of business or residence areas, where the view of the track is not obstructed within necessary visibility zones, and no special hazard exists, a standard rectangular 30-mile speed limit sign in black letters and numbers on a white background should be erected 50 feet from the crossing.

(ii) Where the view of the track is obstructed within necessary visibility zones, or where other special hazards exist, a standard 15-mile speed limit sign, illuminated or with numerals of reflecting type, should be erected 50 feet from the crossing.

(iii) Where due to extreme limitation of view or other specially hazardous conditions crossings have been designated by the proper state commission, in accordance with the Uniform Vehicle Code, to require all vehicles to stop, there should be erected not less than 15 or more than 50 feet from the crossing, at such highway approach, a standard octagon stop sign, illuminated or with letters of reflecting type, bearing the word "Stop" with black letters on a yellow background (red letters on yellow background within municipalities and optional elsewhere).

(iv) Where the speed limit or stop sign cannot be seen sufficiently in advance, a standard diamond-shaped slow sign with black letters on a yellow background should be erected not less than 100 feet in advance of the sign specified in paragraph (b) above.

(c) *Crossing Signs.*—At all grade crossings a standard railroad crossbuck sign with two arms mounted across each other should be installed on the railroad right of way. In case of

Note.—The signs, signals and markings recommended in this report are in complete agreement with those specified in the manuals prepared by the American Association of State Highway Officials for rural highways, the American Engineering Council for city streets and the American Railway Association for signs and signals on railway right of way at grade crossings.

multiple tracks there should be mounted below the crossbuck arms a clearly legible sign indicating the number of tracks.

Train Approach Warning and Protection Measures

At many railway grade crossings the report said, the amount or character of railway and highway traffic warrants special warning of the approach of trains in addition to the standard requirements of warning by the locomotive whistle and ringing of the locomotive bell. At such crossings, the following are recommended in addition to the standard fixed signs and markings:

(a) *Automatic Train Approach Signals.*—At crossings on heavy traveled highways where there are sufficient intervals between train movements, either of the following standard visible warning signals should be installed:

(i) A wigwag signal with a swinging target and red light.

(ii) A flashing light signal with two red lights in a horizontal line 30 inches apart flashing alternately.

As adjuncts to other train approach warning measures, but not as substitutes therefor, bells or other audible signals may be used.

Careful study by the railroads should be continued to determine the feasibility of using time control for train approach warning signals at crossings; that is, such control as will give warning always at the same number of seconds before the train actually arrives at the crossing, regardless of the speed of the train.

(b) *Crossing Gates and Watchmen.*—At crossings on heavily traveled highways where frequent switching movements or shortness of intervals between train movements requires more prompt and positive indication of approach of trains and of clearance of the crossings for highway traffic, crossing watchmen or manually controlled crossing gates or signals should be provided. Crossing watchmen should be equipped with standard crossing watchmen's stop signs, red flags and lanterns. Gates should be made conspicuous by alternate black and white 12-inch striping at an angle of 45 degress sloping downward toward the center of the highway.

Obedience to directions given by gates, crossing watchmen or positive crossing signals is required by the Uniform Vehicle Code.

Excellent work has been done by several agencies in dealing with some of the problems relating to grade crossing protection, the committee said, particularly the American Railway Association and the American Railway Engineering Association, the American Electric Railway Association, the American Standards Association, the National Association of Railroad and Utility Commissioners, the American Association of State Highway Officials and the U. S. Bureau of Public Roads, many of the state commissions and highway departments, municipal administrations and a number of associations dealing with the technical and safety problems involved.

The National Conference on Street and Highway Safety in 1924, through the reports of its Committees on Construction and Engineering, City Planning and Zoning and Public Relations, presented condensed statements of the principal considerations requiring attention in connection with grade crossing elimination and protection of crossings remaining at grade. The Second Conference in 1926 included in its general report a summary of the principles approved by the Conference up to that time. Since then there has been a further development of practices and a tendency toward standardization in the treatment of the problems as well as a growing appreciation of their importance. While progress has been made, both in the elimination of the more important crossings and measures of protection for those remaining at grade, this progress has been spotty as among the different jurisdictions throughout the country and as to the relative attention given to the several important features of the crossing problem listed above. It is the purpose of the report to present briefly what are believed to be the best standards and practices in regard to each of these features for the guidance and information of responsible authorities and the public. Some extracts from the report follow:

Accident Records

In 1929 there occurred in the United States a total of 2,485 fatalities at highway crossings of steam railroads, and 202 at highway crossings of electric railways other than street railways. These constitute 8.7 per cent of the estimated total of 31,000 traffic fatalities during the year. There were 6,804 nonfatal injuries at steam railroad grade crossings.

The effectiveness of various types of protection at grade crossings cannot be definitely appraised because of lack of data as to the amount of highway traffic passing the crossings at which the various types of protection have been installed, but Table B shows the number of each class of crossing and accidents thereat for a typical year.

Table B—Grade Crossing Accidents in 1928 According to Types of Protection

(Interstate Commerce Commission Statistics)

	Number of Crossings	Accidents	Fatalities	Nonfatal Injuries
Crossing gates	5,707	179	88	106
Crossing watchmen	7,297	643	207	762
Visible and audible signals	8,004	331	192	354
Visible signals	3,635	440	245	431
Audible signals	4,572	318	165	354
Fixed signs	205,933	3,841	1,671	4,659
No signs	4,941			

Grade Separation

The number of new crossings added and number of existing crossings (steam railroads with highways) eliminated during three years for all railroads are as shown in Table D.

Table D—Grade Crossing Elimination

(Interstate Commerce Commission Statistics)

	1926	1927	1928
Number of new crossings added	1,876	1,909	2,068
Number of existing crossings eliminated	1,254	1,391	1,204
Number eliminated by separation of grades (included in the last figure above)	195	245	270
Net increase during year	622	518	864

While there was a net increase of 2,004 crossings during this three-year period, the crossings that are being eliminated are mainly those where the greatest exposure occurs. The same is true of crossings at which protective devices are installed. Hence the aggregate hazard at unprotected crossings is being reduced more than the figures as to crossings eliminated and protected might indicate.

Protective Measures

Table E shows the number of crossings and the proportion protected and unprotected for Class I railways:

Table E—Protective Measures at Grade Crossings

	1926	1927	1928
Protected by gates, watchmen, or automatic signals	27,927	28,724	29,215
Protected by fixed signs or barriers	202,620	203,817	205,933
Unprotected	4,611	3,742	4,941

A part of the increase in number of crossings from 1926 to 1928 is due to the amalgamation of Class II and III railroads with roads in the Class I railway group.

Table F shows the percentage of the various types of protective measures employed at the present time.

Table F—Protection at Grade Crossings by Types

Kind of Protection	Percentage of Crossings
Crossing gates	2.4
Crossing watchmen	3.1
Audible and visible signals	3.3
Audible signals	1.9
Visible signals	1.5
Total protected by watchmen or devices to indicate approach of trains	12.2
Protected only by fixed signs	85.8
No protection	2.0
Total	10 0

Such analyses as have been made of the effectiveness of the different types of crossing protection, taking into consideration the volume of traffic on the rails and highways, show that protection is of unquestionable value.

There has been a steady decline year by year in the number of crossings protected by gates, and also in the number protected by crossing watchmen. It should be noted, however, that cross-

ings selected for elimination year by year are largely those where gates, watchmen or both were formerly utilized, and that a part of this decline is also due to the substitution of flashing light or wigwag signals for gates or watchmen. It does not indicate retrogression in methods or extent of protection.

The trend of protection seems to be toward the visible type of automatic signals; that is, devices that indicate the approach of locomotives or trains.

The installation cost of a flashing light or wigwag train approach signal varies greatly according to number of tracks, type of installation and particular location. Recent studies show a spread in usual costs from $1,500 to $4,000 per crossing, while some installations cost less than the minimum here indicated and others more than the maximum. Annual maintenance, depreciation and operating costs average at least 20 per cent of the cost of installation. A recent study of the cost of manually-controlled gates indicated an average of $1,278 per crossing for installation, with an annual cost (for maintenance, operation, watchman's wages and so forth) in excess of $3,000 per year. With 240,000 grade crossings to be protected, it is obvious that the costs of automatic wigwag or flashing signals or of gates and watchmen would be such a large amount, which, in the last analysis, must be borne by the public, that these special forms of protection can be installed only at the crossings where there is considerable rail and highway traffic.

In order to avoid placing an undue burden upon the railroads, and to assist in expediting the provision of appropriate protection of this character where needed, the public authorities should contribute a fair share of the costs of such protection, following principles similar to those adopted in sharing the expense of grade crossing elimination.

Furthermore, the public authority can expedite the proper protection of crossings by adoption of uniform standards throughout the country, thus doing away with the hampering effects upon the efforts of the railroads due to the necessity of complying with laws which differ in the various states.

The Uniform Vehicle Code contains several provisions relating especially to railroad grade crossings. One of these is that operators of motor vehicles must keep to the right in crossing railroads, thereby affording operators coming in the opposite direction opportunity to clear the intersection without delay. Another is the obviously necessary one that railroad warning signals must be observed.

The Uniform Code further requires that certain vehicles, such as street cars, motor buses, school buses and trucks carrying gasoline or other inflammables or explosives, must stop at all railroad grade crossings. This provision is particularly appropriate, inasmuch as the operators of such commercial vehicles have special responsibilities to the public and should be skilful enough as operators to make quite unlikely that the vehicle will stall or run into danger in starting over the crossing after a stop.

In addition, the Uniform Code requires in the case of certain types of slow-moving equipment that provision be made to give ample advance warning to the railroad company to enable it to protect approaching trains against the stalling of such equipment on the crossings.

In some states laws have been passed requiring all motor vehicles to stop at all grade crossings. Such legislation has been vigorously opposed by the motoring public, both because it causes congestion on busy highways, subordinating even the heaviest highway traffic to the railway traffic no matter how light, and forcing stops many times where there is no need for a stop; and because it can be seriously questioned whether stopping at every crossing and then proceeding across at low speeds does not prolong the hazard and introduce danger of stalling. On the other hand, as previously pointed out, it is evident that there are many crossings at which the only safe course for the motorist is to stop and see whether a train is approaching from either direction before proceeding. The Uniform Vehicle Code therefore empowers the proper state authorities to designate and indicate by signs certain dangerous crossings at which every motor vehicle must stop.

The following new section proposing a requirement that certain vehicles must stop at all railway grade crossings was inserted as Section 47 in the Uniform Act Regulating Traffic on Highways:

(a) The driver of any motor bus carrying passengers for hire, or any school bus carrying any school child, or any motor truck carrying explosive substances or inflammable liquids as a cargo or part of a cargo before crossing at grade any track or tracks of a steam or interurban electric railway, shall stop such vehicle not less than ten (10) feet or more than fifty (50) feet from the nearest rail of such track, and while so stopped shall both look and listen in both directions along such track for approaching steam or interurban electric railway trains or cars before traversing such crossing. The provisions of this subdivision shall not be deemed to apply at the crossing of a street or highway and street railway tracks, or to interurban electric tracks where traffic control signals are in operation and give indication to approaching vehicular traffic to proceed.

(b) Any person operating any caterpillar tractor, steam shovel, derrick, roller or any equipment having a normal operating speed of six or less miles per hour or a vertical load or body clearance of less than 9 inches above the surface of the roadway shall, before crossing at grade any track or tracks of a steam or interurban electric railway, notify a responsible officer of such railway in time for protection to be afforded before crossing such railway tracks, and in any crossing of such railway tracks shall first stop such vehicle or equipment not less than ten (10) feet nor more than fifty (50) feet from the nearest rail of such track, and, while so stopped, shall both look and listen in both directions along such track for approaching steam or interurban electric railway trains or cars before traversing such crossing, but shall not in any event traverse such crossing when warned by automatic signal or crossing gates or flagmen or otherwise of the immediate approach of a railway train or car.

Signalman's Carbide Lantern

THE National Carbide Sales Corporation, New York City, has placed on the market a new model of its signalman's lantern, the distinctive feature of which is a rear light which can be changed from one color to another. The knob beneath the rear light, shown in the illustration, is a lock by which the lens is fastened in one position or the other. Turning this rear light on its vertical spindle, 90 degrees, changes the light (as seen from the rear) from red to green or green to red, as may be desired. Two distinct operations are necessary to change from color to color.

This lantern, designed especially for the use of signal maintainers or track walkers when working in a tunnel, weighs when fully charged 6¼ lb.; diameter of base 6¾ in., height over all 11¾ inches.

The front (white) light gives about 75 candlepower and the lamp, when charged, is good for eight hours.

* * *

A New York, New Haven & Hartford Train Approaching New York City

Looking Backward

Fifty Years Ago

The Carolina Central [now part of the Seaboard Air Line] was sold at Wilmington, N. C., on May 31 to representatives of the first-mortgage bond holders for $1,200,000. The road extends from Wilmington, through Charlotte, to Shelby, 242 miles. The net earnings for the four years past have averaged $583 per mile.—*Railroad Gazette,* June 4, 1880.

The annual report of the Chicago, Milwaukee & St. Paul [now the Chicago, Milwaukee, St. Paul & Pacific] for the year ending December 31, 1878, showed the total of all lines owned, leased or operated to be 1,512 miles. The present number of miles operated at 3,022 an increase of almost exactly 100 per cent in 18 months.—*Railway Age,* June 10, 1880.

The president of the Master Car Builders' Association [now part of Division V—Mechanical American Railway Association] in his address at the annual convention at Detroit on June 8 made the significant prediction that the maximum load of eight-wheel freight cars will in a short time have increased from 10 tons to at least 20 tons, while four-wheel cars will be carrying from 10 to 12 tons. The committee on freight train brakes reported that it had had correspondence with 22 inventors, and gave encouragement of the ultimate success of the endeavors to produce brakes that will act independently on any car to which they are attached.—*Railway Age,* June 10, 1880.

Twenty-Five Years Ago

F. G. Jonah, formerly chief engineer of the St. Louis, Brownsville & Mexico [now part of the Gulf Coast Lines], has been appointed terminal engineer of the New Orleans Terminal Company. J. P. O'Brien, general superintendent of the Oregon Railroad & Navigation Company [now the Oregon-Washington Railroad & Navigation Company], has been elected vice-president and general manager of that road.—*Railway Age,* June 9, 1905.

The Vanderbilt and Pennsylvania lines have entered upon a speed war between Chicago and New York which has resulted in the announcement of 18-hour trains each way on both lines. The announcement of the proposed establishment on June 18 of a 19-hour schedule, eastbound, between Chicago and New York for the Twentieth Century Limited was followed by notice from the Pennsylvania of an 18-hour schedule for the Pennsylvania Special, both ways, beginning June 11. On June 6 the chief operating and traffic officers of the New York Central met and decided that on June 18 the Century schedule would be 18 hours, in both directions. At the same time the Pennsylvania Manhattan Limited was given a 24-hour instead of a 25-hour schedule and the New York Central Lake Shore Limited was placed upon a 23-hour instead of a 24-hour schedule.—*Railway Age,* June 9, 1905.

Ten Years Ago

The consolidation of as much freight as possible into solid trains to single destinations and distributing centers, as a means of avoiding car congestion in classification yards and minimizing switching movements, is one of the principal recommendations to the railroads and to shippers sent out recently by the Commission on Car Service and by the Interstate Commerce Commission. Demands for box cars continue heavy with shortages in central and northwestern territories. There is no improvement in the mill type gondola situation, while the situation at Lake Erie ports is very serious and the car supply for the movement of coal and ore is anything but adequate.—*Railway Age,* June 4, 1920.

New Books

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

America's Dinner Table—Without Modern Transportation, What? by Curtis I. Sawdey. Sketches development of refrigerator cars and their relation to the supply of fresh fruits and vegetables. 8 p. Pub. by Fresh Fruit and Vegetable Institute, Cincinnati, Ohio. *Apply.*

Outlines of Economics (*Fifth Revised Edition*), by Richard T. Ely, Thomas S. Adams, Max O. Lorenz, and Allyn A. Young. Chapter 20, "Distribution as an economic problem," and Chapter 28, "Transport economics," may be of especial interest. 868 p. Pub. by The Macmillan Company, New York City. $3.

Periodical Articles

Death Valley Has Come to Life, by R. C. Henderson. Motor coach tours and a narrow-gauge railroad make sight-seeing easy, and a landing field has been made on the floor of the Valley. Illustrated. Nation's Business, May, 1930, p. 76, 79-83.

The Lure of Lima, City of Kings, by William J. Showalter. The pictures of the Central Railway of Peru included in the illustrations of this article are unusual. Plate VII is in color—"Someone facetiously has said that the Central Railway flirts with the moon and makes faces at the Milky Way." The Infiernillo Bridge and some of the switchbacks are shown. National Geographic Magazine, June, 1930, p. 727-784.

The Men in the Railroad Mergers, by L. B. N. Gnaedinger. "In devising a plan of consolidation, the Interstate Commerce Commission has become arbiter to personalities diverse as any arrayed in the turbulent history of American railroading." Nation's Business, June, 1930, p. 32-35, 110-113.

The Regulation of Holding Companies, by Lowell M. Greenlaw. A review. Academy of Political Science Proceedings, May, 1930, p. 108-131.

Safety Work on the Canadian National Railways, by W. D. Robb. The author is Vice-President of the Canadian National and President of the Canadian National Railways Council of the St. John Ambulance Association. The organization of safety work and the special problems of this railway are discussed. Labour Gazette [Canada], May, 1930, p. 535-537.

The Turkestan-Siberian Railroad—In the Heart of Asia—On the Frontier of China. "Linking with the Trans-Siberian Railroad at Semipalatinsk, the new Turkestan-Siberian Railway forms a link of an arc which surrounds China on her northern and north-western frontiers. * * * [It] connects at Lucovaia with the European lines through the Caucasus." p. 149. Map and photograph of "Bill Shatoff, American Builder of the Turkestan-Siberian Railroad," p. 149. Far Eastern Review, April, 1930, p. 149-151.

Your Business Needs the Railroads, by Samuel M. Vauclain, in collaboration with Earl Chapin May. "But though I make my living out of railroads, my attitude toward them is one of armed neutrality. Hence I have no bias toward them except that induced by common sense and a desire for national prosperity—and national safety, when it comes to that." p. 31. Nation's Business, June, 1930, p. 31-34, 168.

Odds and Ends of Railroading

This Wins the Prize

Wallace Baker, champion golfer of the Missouri-Kansas-Texas, in the presence of such unimpeachable witnesses as H. E. McGee, vice-president and general manager, and J. F. Hennessey, executive general agent, made a hole-in-one on the River Oaks course at Houston, Texas, recently. But that isn't all. This was Baker's sixth hole-in-one during his career as a golfer. He's getting so that he expects an ace every time out.

Times Change

When, on April 30, 1803, Emperor Napoleon sold the land comprising the present states of Louisiana, Arkansas, Oklahoma, Kansas, Missouri, Nebraska, Iowa, North Dakota, South Dakota, and portions of Minnesota, Colorado and Wyoming, he received $15,000,000. It is interesting to observe that 127 years later, dozens of railways operating in this territory have greater annual budgets than the entire sum Napoleon received.

Former Railroad-Owned Slave

Once owned as a slave by the Alabama & Mississippi Rivers Railroad Company, now the Southern, Taylor Parkman, retired colored hammerman in the Selma, Ala., shop of the Southern, died recently after 72 years continuous service. In 1858, Taylor Parkman, then a young man recently brought to Alabama from Virginia, was hired by his owners to the Alabama & Mississippi Rivers, then engaged in grading the line from Selma, Ala., to York, 76.5 miles, now part of the Mobile division of the Southern. He was later bought by the railroad company and put to work in the Selma shop. After the emancipation of the slaves, Parkman continued to work in the shop and remained in active service until February 24, 1925. He did not know the date of his birth but his age was thought to have been well above 90 years.

Belgian Crossing Protection

The state railways of Belgium have an unusual number of grade crossings for Europe, where grade crossings are not as plentiful as on American railways. These crossings are protected by heavy steel gates, some three feet high. A rail is set across the road, parallel to the tracks, and the gate is equipped with wheels, and rolled across the road whenever a train approaches, thus effectually blocking the road. The cheapness of labor makes it possible to employ a crossing watchman every few hundred yards, if necessary, to operate these gates by hand. Small stone houses are supplied for these watchmen, and they frequently supplement their income by selling produce to passing motorists. It is interesting to note, however, that instances of motorists crashing into these gates are by no means unknown. Many broken headlights and bent fenders attest to the frequent carelessness in this regard.

Why an Engine Should be "She"

The following amusing letter from a "Japanese Lady" appears in the "Shipping Register" of San Francisco:

"Sometime ago you publish in your voluble paper article on female shipping steamer. I have thought to write you about female engine on train. You know why? Yes, they call she for many becauses.

"They wear jacket with yokes, pins, hangers, straps, shields, stays. They have apron, also lap. They have not only shoes, but have pumps. Also hose and drag train (passenger and freight) behind; behind time all time. They attract men with puffs and mufflers and when draft too strong petticoat goes up. This also attract. Sometime they foam and refuse to work when at such time they should be switched. They need guiding—It always require man manager. They require man to feed them. When abuse are given, they quickly make a scrap.

"They are steadier when coupled up, but my cousin say they terrible expense. Is not enough reason?"

Dog Watchman

While searching through old records of the Fitchburg Railroad, an amateur historian on the Boston & Maine has discovered what he considers to be the first instance of a dog regularly employed by a railroad. A license was obtained for the dog, with the railway named as owner, on May 6, 1869. An old-timer recalls that the dog was used as a sort of assistant watchman at the passenger station.

A Veteran at 34 Years

San Francisco, Cal.

To the Editor:

The issue of April 19 has an item regarding young veterans. I should like to add to the literature on the subject with the following:

Carl F. Fennema, assistant to the vice-president and general manager of the Southern Pacific Golden Gate Ferries, is a railroad veteran whose record should not be overlooked. Age 34, he has had 21 years and four months service as a railroader. When Mr. Fennema was, at the age of 33 years, transferred from his position as chief clerk in the motive power department of the Northwestern Pacific to his present position with the Southern Pacific Golden Gate Ferries, he had had 20 years and four months continuous service.

William S. Wollner,
Gen. Safety, Fire Insp. and Welfare Agt.,
Northwestern Pacific

The Song of the Box Car

Frank J. G. Duck, of the advertising department of the Worthington Pump & Machinery Corporation, Harrison, N. J., sends us the following verses, clipped from the New York Herald Tribune:

I am battered by wearisome journeys,
My paint is bedrabbled with rust;
I bear the dull stains of the long winter rains
And the scars of the desert-blown dust.
As I wind beside sinuous rivers
My flanges scream loud on the rails,
And the echoing lakes spread the sound of my brakes,
Through re-echoing mountains and vales,
I grumble and groan as I roll down the track,
But the whole system rides on my dingy old back.

I must move to one side for the flyer
That darts like a streak through the night
Speeding madly afar like a runaway star—
A long line of glittering light.
Then a jolt and a jar from my engine,
A bang and a clank and a grind,
And again on my way through another full day
I loiter along on behind.
A dreary and laboring life do I lead,
But I pay for the limited's splendor and speed.

My journals are worn with rough going,
My planking is broken and old;
For full many a year, on my limping career
I have weathered the heat and the cold.
I am merely a traveling freight shed,
A merchandise warehouse a-wheel,
And the junkman some day will be carting away
My splinters of timber and steel.
But no vestibuled flyers de luxe would there be
If it wasn't for rusty old box cars like me!

NEWS *of the* WEEK

On the New York, New Haven & Hartford at Sharon

THE CHICAGO & NORTH WESTERN will hold its annual track and field meet at Evanston, Ill., on August 18. The fourth season of athletics will open on June 8, when baseball contests will be started leading to a championship game between the winners of the league on August 18.

THE PACIFIC RAILWAY CLUB will hold its next meeting at the Transportation Club, Palace Hotel, San Francisco, on Thursday evening, June 12. The problems of a railroad superintendent will be discussed by H. J. Beem, (W. P.); C. G. Fluhr, (A. T. & S. F.) and W. L. Hack (S. P.); and by U. S. Sliter, and W. S. Penfield of the Key System.

Wage Statistics for March

The number of employees reported to the Interstate Commerce Commission by Class I steam railways as of the middle of March was 1,546,663 and the total compensation was $227,066,435. Compared with the returns for the corresponding month of last year the summary for March shows a decrease of 81,725 in the number of employees, or 5.02 per cent, and a decrease of $14,083,342, or 5.84 per cent, in the total compensation.

Group Life Insurance

The Wabash has consummated a group contract with the Metropolitan Life Insurance Company, which provides about 15,000 employees of the railroad and its affiliated and subsidiary organizations with approximately $20,000,000 life insurance, $20,000,000 accidental death and dismemberment insurance, and weekly sick and accident benefits. The cost of the triple coverage will be borne jointly by the employer and employees. Participating employees are divided into three salary groups, which classifications makes the life insurance and accidental death insurance each range from $1,000 to $3,000. The sick and accident benefits range from $10 to $20 a week.

Pensions on Central of Georgia

The Central of Georgia in 1929 retired on pension 39 employees, 20 of whom had not reached the age of 70, but were retired because of physical incapacity. This road has paid pensions since 1913, disbursing thereon a total of $541,816. There are now on the rolls 155 pensioners, who receive an average of $49.13 a month, or $589.56 yearly. This is equivalent to the interest on Central of Georgia bonds with a market value of more than $12,000. To have accumulated this sum the pensioned employee would have had to save an average of $350. for each year he was in active service. Under this pension system, each year of service is equivalent to the payment of a premium on an endowment insurance policy.

Divided Basket Bunker vs Brine Tanks in Refrigerator Cars

Transportation circular No. 47, which was issued recently by the Department of Agriculture, Fruit Branch, Dominion of Canada, gives the results of an investigation of the respective merits of divided basket bunkers and brine-tank refrigerator cars made during the past winter. Comparative tests were made with heated lading during the month of February, 1929.

The two cars employed in the test described in the circular were loaded with potatoes at separate points on Prince Edward Island. Inside temperatures were observed with six electric resistance thermometers which were installed in each car from Borden, P. E. I., and Moose Jaw, Sask. A chart is included with the circular which shows the average floor and top-load temperatures between these two points.

Allege Traffic Used to Influence Taxicab Concession

A temporary injunction restraining the General Motors Corporation and some of its subsidiaries from the employment of certain alleged methods of obtaining a franchise for the Terminal Cab Corporation at the Furness-Bermuda Line pier in New York, was issued at the request of the Yellow Taxicab Corporation in the Supreme Court of New York on May 29.

The complaint alleged that the General Motors Corporation brought pressure to bear so that its subsidiary the Terminal Cab Corporation might obtain the taxicab franchise at Grand Central and Pennsylvania stations in New York. In support of this allegation that General Motors would be in a position to bring pressure to bear on a railroad, the Yellow Taxicab Corporation asserted that the General Motors "is one of the largest shippers of freight in the United States."

Monon to Engage in Motor Coach and Air Transportation

The Chicago, Indianapolis & Louisville has filed incorporation papers with the secretary of state of Indiana for the Monon Transportation Company which has been organized for the purpose of engaging in motor coach and air transportation. At the time of the filing of the incorporation papers it was stated that the formation of the company is a step necessary to enter these new transportation fields, such as the Pennsylvania has already taken through the Greyhound motor coach lines.

P. R. R. Employees Open New Golf Club

Pennsylvania Railroad employees in the Philadelphia district celebrated the opening of their new golf club on Memorial day. The employees' golf organization was formed six years ago and its first course was laid out on a farm rented from the railroad's real estate department. Meantime, permanent quarter were sought and recently were found in a 200-acre farm at Frazer station, in the Philadelphia suburban area. The large barn on the premises was entirely remodeled to serve as a club house; a caddy house was built and an eighteen hole course was laid out. At the opening on Memorial day, general officers of the company were paired off with employee members of the club in the tournament which was held. The entire activity is that of employees, with the railroad company not officially connected with it in any way.

Oregon-Washington Protests Oregon Line Construction

A petition to enjoin the Interstate Commerce Commission from enforcing its order of December 3, 1929, requiring the Oregon-Washington Railroad & Navigation Company to construct a line between Crane, Oregon, on that road, and Crescent Lake, on the Southern Pacific, 185 miles, was filed in the fed-

eral court at Portland, Ore., on May 28. The railroad's petition asserts that the construction cost would approximate $11,000,000, that its outstanding securities would shrink in value by reason of this expenditure, that the Crescent Lake terminus would be more than 100 miles from an existing line of the O.-W. R. & N., that it could not be operated without an annual deficit of at least $1,000,000 and that existing lines would suffer from traffic diversion.

The commission's order stipulated that construction must be started by July 1, 1930, and completed and the line placed in operation by July 1, 1933, with a penalty of $100 per day for failure to comply. The railroad's petition further states that the Oregon Public Service Commission's original estimate of traffic that could be assigned to the proposed line and the earnings from such traffic "were unsupported by evidence and were based upon unwarranted assumptions, speculations and conjecture." The line could expect to develop very little traffic, it was said.

Purchases and Stores Convention Program

The program of the eleventh annual meeting of Division VI—Purchases and Stores—of the American Railway Association, to be held June 18, 19 and 20 in Atlantic City, N. J., in the new Municipal auditorium, is as follows:

WEDNESDAY, JUNE 18, 9 A.M. TO 1:30 P.M.
Address by C. E. Denney, president, Erie
Address by R. H. Aishton, president, American Railway Association
Report of General Committee
Address by Chairman W. Davidson, general storekeeper, Illinois Central
Presentation and discussion of reports:
Subject 1—Stores Department Book of Rules
Subject 2—Classification of Material
Subject 4—Comparisons of Material Stock Reports and Store Expenses
Subject 5—Forest Products
Paper—"The Value of Specialized Railroad Lumber Buying," by A. F. Latta, lumber buyer, Canadian Pacific
Subject 3—Recovery, Repairs and Reclamation of Discarded Material—Classification, Handling and Sale of Scrap
Joint Committee on Reclamation
Subject 8—Control of Shop Manufacturing Orders for Stock Materials

THURSDAY
Paper—"Visible Card Stock Control Record," by C. B. Tobey, general storekeeper, Lehigh Valley
Subject 6—Purchasing and Storekeeping for Motor Bus Operation
Subject 12—Purchasing Agents' Organization, Practices and Office Records
Subject 13—Stationery and Printing
Annual contest papers—
Subject 14—Fire Prevention
Subject 15—Motorized and Unified Delivery and Distribution of Materials
Subject 16—Standardization and Simplification of Stores Stocks
Paper—"Handling Signal Material," by A. P. Pollard, traveling storekeeper, Boston & Maine
Subject 19—Capacity Loading and Prompt Handling of Company Materials
Subject 22—Selection and Training of Employees in Purchasing and Stores Departments

FRIDAY
Paper—"Rating of Efficiency of the Purchasing Department," by P. L. Grammer, assistant purchasing agent, Pennsylvania
Subject 10—Control of Materials Stocks and Coordinating Procurement with Actual Needs
Subject 11—Pricing Methods
Subject 21—Purchasing, Storage and Distribution of Equipment and Supplies Used in Dining Cars, Hotels and Commissaries
Subject 23—Promotion of Conservation Methods in Use of Materials
Subject 17—Stores Department Safety Practices
Subject 18—Terminal Railway Storekeeping
Subject 7—Workable Rules in Connection with the Carrying Out of the Provisions of Section 10 of the Clayton Anti-Trust Act
Subject 9—Locomotive Fuel
Subject 20—Joint Committee on Metric System.

Railway Development Association

The American Railway Development Association will hold its twenty-second annual meeting at the Hotel Duluth, Duluth, Minn., on June 18, 19 and 20. The program will include general sessions on each of the three mornings, while the afternoon of the second day will be devoted to industrial and agricultural section meetings. During the general session on the first day, W. A. McGonagle, president of the Duluth, Missabe & Northern, Fred D. Vibert, director of the Minnesota Arrowhead Association, and J. H. Hearding, assistant general manager of the Oliver Iron Mining Company, will be the principal speakers. During the general session on the second day, the program will include the election of officers and addresses by E. T. Gerish of the U. S. Department of Commerce, John Lee Coulter of the Federal Farm Board, Dr. Henry Mace Payne, geologist of the Gulf, Mobile & Northern, and Dean W. C. Coffey of the University of Minnesota. Harold V. Coes, consulting engineer of the Ford, Bacon & Davis Company, H. M. Means, horticultural agent of the Chicago, Rock Island & Pacific, and Ray L. Sicard of the Duluth Chamber of Commerce will address the meeting on the third day.

The Industrial section program on the second afternoon provides for discussions of the various problems relating to industrial development. These will be presented by A. E. Gilman, manager of industrial development of the Missouri-Kansas-Texas, E. C. Hoag, industrial agent of the Union Pacific, and J. H. Dolvin, industrial agent of the Atlanta, Birmingham & Coast. The Agricultural section session will discuss problems of agricultural development, concentrating on the co-ordination of railway development programs with those of the state extension services. The subjects will be presented by Nat T. Frame, director of extension of the University of West Virginia, and P. F. Schowengerdt, director of agricultural development of the Wabash.

Budd Sails for Russia

Ralph Budd, president of the Great Northern, who has been invited by the Commissariat for Transportation of the U. S. S. R. to render consultation services in connection with the reorganization of the Soviet Railway system, sailed for Europe on May 29. He was accompanied by members of his staff including Henry K. Dougan, executive assistant; W. R. Wood, mechanical engineer, and Homer Bassett, secretary to the president of the Great Northern. One of Mr. Dougan's assignments will be the making of studies of traffic density, while Mr. Wood will devote his attention to the Russian motive power needs.

D. E. Sulimov, vice-commissar for transportation of the Soviet Union, sailed on the same day, with several members of the Soviet delegation which has been studying American railway operating methods for the past three months. In commenting upon Mr. Budd's visit to the Soviet Union Mr. Sulimov stated:

"According to our agreement with Mr. Budd, we anticipate having the benefit of his advice in all matters concerning our railroad transportation, especially as regards more rational methods of exploitation, better use of rolling stock, improved methods of repairing rolling stock, advice as to the most suitable types of locomotive and freight cars, technical standards, and general advice in regard to the most effective and economical methods to be used in constructing our new railway lines.

"We regard Mr. Budd's visit to the Soviet Union as the beginning of more extensive contacts between the Soviet transport system and railroads of the United States. We anticipate future visits of American transport specialists in the fields of railroad, highway and water transportation, both for short periods and for permanent employment."

The Canadian Lines in April

Operating net of the Canadian Pacific for the month of April amounted to $1,673,856, as against $3,190,566 in April of last year. Gross earnings showed a decrease of $3,551,822, at $13,977,550, while operating expenses at $12,303,693, showed a reduction of $2,035,112.

For the first four months of the current year ended with April, operating net of the company amounted to $5,359,705, a reduction of $5,474,442, when compared with the $10,834,146 shown in the like period of last year. Gross for the four months was $52,908,294, a reduction of $12,483,508 from the $65,391,802 figure shown last year. Operating expenses were cut similarly from $54,557,656 in 1929 to $47,548,589.

The following table shows the earnings, expenses and net for the month of April, and for the four months of the fiscal year ended with April:

APRIL

	1930	1929	Decr.
Gross	$13,977,550	$17,529,372	$3,551,822
Exp.	12,303,693	14,338,806	2,035,112
Net	$1,673,856	$3,190,566	$1,516,710

FOUR MONTHS ENDING

	April '30	April '29	Decr.
Gross	$52,908,294	$65,391,802	$12,483,508
Exp.	47,548,589	54,557,656	7,009,066
Net	$5,359,705	$10,834,146	$5,474,442

Gross revenues of the Canadian National for April were $18,310,024 as against $23,210,729 for the corresponding month of 1929. The decrease in gross earnings as compared with April, 1929, was $4,900,705. In April, 1930, operating expenses were $16,119,330 as compared with operating expenses of $18,559,784 in April, 1929, a decrease of $2,440,453. Net revenue for April, 1930, amounted to $2,190,693 against net revenue of $4,650,944 in April, 1929. The operating ratio for April, 1930, was 88.04 per cent, as compared with 79.96 per cent in April, 1929.

For the four months period ending April 30, gross revenues were $70,892,654 against $84,515,476 in the same period of 1929, a decrease of $13,622,822. Operating expenses in the 1930 four months' period were $64,137,439 against $68,682,270 in the similar period of 1929, a de-

crease of $4,544,830. Net revenues for the 1930 period were $6,755,214 as compared with $15,833,205 for the corresponding months of 1929, a decrease of $9,077,991. The operating ratio for the four months of 1930 was 90.47 per cent as compared with 81.27 per cent for the similar period of 1929.

Shop Crafts Draft Five-Day Week Program

A 40-hour week consisting of five 8-hour working days was voted by the Railway Employees' department of the American Federation of Labor at the eighth convention, held recently at Chicago, as the principal point in its plan for the stabilization of employment on the railroads. The 40-hour week of five days would be placed in effect except where continuous operation is necessary, when the day would be divided into a series of shifts, in some instances ranging as high as four. The question of a date for instituting the proposed program was referred to the executive council of the railway department of the Federation.

The other points in the program, which constituted a special report of a committee on job stabilization, were as follows:

Limitation of the number of apprentices to that necessary to meet the needs of the industry.

A two-weeks' annual vacation with pay for all men who have been in service for more than one year.

Establishment of a minimum working force at the beginning of each year, to guarantee each employee at least 12 months of continuous employment, but without interfering with the right of the management to hire additional men.

Performance of as much building and converting of locomotives and cars in railroads shops as possible, and the manufacture, instead of purchase, of parts and other equipment.

Establishment of a maintenance reserve program under which more repair work would be undertaken during periods of reduced business, in order to have cars and locomotives in first class condition to meet all requirements of busy seasons.

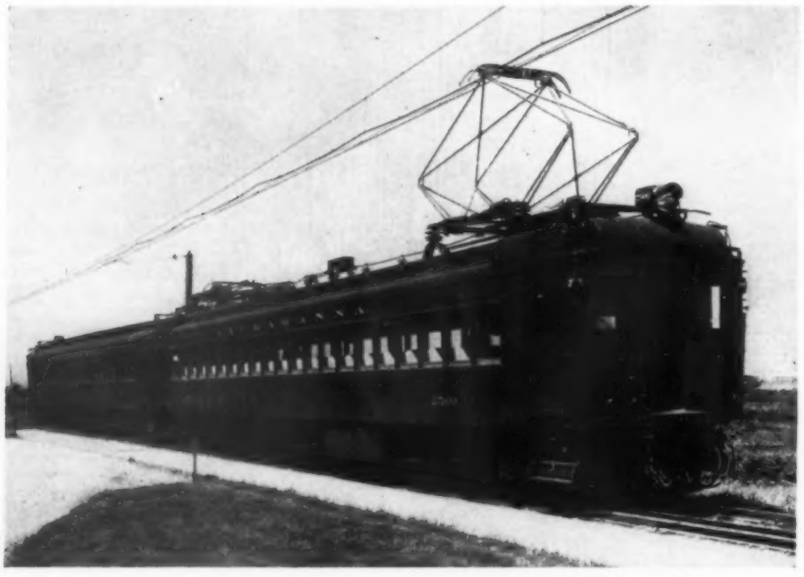
The report recommended that "in the adjustment of hours to meet the provisions of the proposed rules, the reduction in hours shall not be considered an increase in pay, and that the new hourly rates will be adjusted upward accordingly on the basis of the 40-hour week." The convention also decided to leave the matter of the gradual elimination of helpers to the individual shop crafts. Jurisdictional disputes will in the future be decided either by the organizations on the railroad involved, or by agreement between the respective international unions.

The delegates at the convention planned to further the election of candidates for political offices who are known to favor an eight-hour law for workers in all industries. Burt M. Jewell, president, and James M. Burns, secretary-treasurer, were unanimously reelected by the meeting.

Lackawanna Tests Multiple Unit Cars

At Erie, Pa., on May 27, officers of the Delaware, Lackawanna & Western, the General Electric Company, and Jackson & Moreland, consulting electrical engineers of Boston, Mass., witnessed tests of the first two-car unit for the electrified commuter service of the Lackawanna between New York City and northern New Jersey. Powered by four 230 h.p. (1 hour rating) motors and using the 3,000 volt direct current system for the first time in multiple unit service in the United States, the train, consisting of one motor car and one trailer, attained a speed of 71½ miles per hour, with an acceleration of 1½ miles per second. In emergency operation tests, the electro-pneumatic brakes brought the train to a stop in exactly 2/10 of a mile from a speed of 56 miles per hour.

Work is to be rushed with all practicable speed on 140 additional two-car units, each seating 166 passengers. When finished, they will be used in trains of 2, 4, 6, 8 and 10 cars, as necessary to accommodate the traffic moving. Barring unforeseen delays the Lackawanna multiple unit suburban service is to be in operation between Hoboken, N. J., Montclair and the Oranges by mid-September, Morristown and Dover by mid-December and Gladstone on or about January 1, 1931.



The First Motor Car and Trailer Unit to be Tested for the Delaware, Lackawanna & Western's Electrified Suburban Service in Northern New Jersey

Canada's Premier Promises Peace River Pacific Line

Another and more definite promise that the Canadian government would take steps to provide a railway outlet for the Peace River district to the Pacific Coast, failing a joint undertaking now under consideration by the Canadian Pacific and the Canadian National, was made in the House of Commons at Ottawa last week by Premier Mackenzie King, who said:—

"I have had a personal interview with the president of the Canadian Pacific and the Minister of Railways and Canals has interviewed the president of the Canadian National. Both presidents agree that in their view it should be possible for some appropriate outlet to be agreed upon within a period of possibly six months, and I understand they have their surveyors at work with a view of determining a suitable route.

"The president of the Canadian Pacific mentioned that a joint survey of the natural resources of British Columbia had been undertaken last year at the expense of the government of British Columbia, the Canadian National and the Canadian Pacific, which was done in consequence of a suggestion made by him to the provincial authorities. It is expected that the result of that survey will shortly be made available.

"In the opinion of the government it ought to be possible for these companies to agree upon a route within six months and to have work begun within a year on a railway which will afford an outlet from the Peace river district to the Pacific. If they do not make a beginning within a year and the present administration should be in office at the end of that period, we will undertake to find a way or make it for the beginning of the construction of a railway line from the Peace river district to connect with the Pacific via some other railway line or otherwise."

Meetings and Conventions

The following list gives names of secretaries, date of next or regular meetings and places of meetings.

AIR BRAKE ASSOCIATION.—T. L. Burton, Room 5605, Grand Central Terminal Building, New York City. Next meeting, Toronto, Ont., 1931. Exhibit by Air Brake Appliance Association.

AIR BRAKE APPLIANCE ASSOCIATION.—Fred W. Venton, Crane Company, 836 So. Michigan Blvd., Chicago. Meets with Air Brake Association.

AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.—J. D. Gowin, 112 W. Adams St., Chicago.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE

AGENTS.—E. L. Duncan, 332 S. Michigan Ave., Chicago.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York. Annual meeting, October 7-9, 1930, Atlantic City, N. J.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Room 400, Union Station, St. Louis, Mo. Next convention, June 16-19, 1930, Hotel Nicollet, Minneapolis, Minn.

AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.—J. H. Hawley (B. R. & P. Ry.) E. Salamanca, N. Y.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—Guy C. Hecker, 292 Madison Ave., New York. Annual Convention, June 23-26, 1930, San Francisco, Cal.

AMERICAN RAILWAY ASSOCIATION.—H. J. Forster, 30 Vesey St., New York, N. Y.

Division I.—Operating.—J. C. Caviston, 30 Vesey St., New York, N. Y.

Freight Station Section.—R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago. Next meeting, June 17-20, 1930, Brown Hotel, Louisville, Ky.

Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., New York.

Protective Section.—J. C. Caviston, 30 Vesey St., New York. Next meeting, June 17-19, 1930, Hotel Statler, Buffalo, N. Y.

Safety Section.—J. C. Caviston, 30 Vesey St., New York. Annual meeting, July 1-3, 1930, Cosmopolitan Hotel, Denver, Colo.

Telegraph and Telephone Section.—W. A. Fairbanks, 30 Vesey St., New York. Next convention, Sept. 16-19, 1930, Royal York Hotel, Toronto, Ont.

Division II.—Transportation.—G. W. Covert, 59 East Van Buren St., Chicago.

Division III.—Traffic.—J. Gottschalk, 143 Liberty St., New York.

Division IV.—Engineering.—E. H. Fritch, 59 East Van Buren St., Chicago. Next meeting, March 10-12, 1931, Palmer House. Chicago. Exhibit by National Railway Appliances Association.

Construction and Maintenance Section.—E. H. Fritch. Next meeting, March 10-12, 1931, Palmer House, Chicago.

Electrical Section.—E. H. Fritch.

Signal Section.—H. S. Balliet, 30 Vesey St., New York. Next meeting Arlington Hotel, Hot Springs, Ark., September 9-11, 1930.

Division V.—Mechanical.—V. R. Hawthorne. 59 East Van Buren St., Chicago. Annual convention, June 18-25, 1930, New Auditorium, Atlantic City, N. J. Exhibit by Railway Supply Manufacturers' Association.

Equipment Painting Section.—V. R. Hawthorne, 59 East Van Buren St., Chicago. Next convention, September 9-11, 1930, Congress Hotel, Chicago. Exhibit by Supply Men's Association.

Division VI.—Purchases and Stores.—W. J. Farrell, 30 Vesey St., New York, N. Y. Annual convention, June 18-20, 1930, New Auditorium, Atlantic City.

Division VII.—Freight Claims.—Lewis Pilcher 59 East Van Burean St., Chicago. Next meeting, June 10-13, 1930, Olympia Hotel, Seattle, Wash.

Division VIII.—Motor Transport.—George M. Campbell, 30 Vesey St., New York, N. Y. Next meeting, June 18-20, 1930, New Auditorium, Atlantic City, N. J.

Car Service Division.—C. A. Buch, 17th and H. Sts., N. W., Washington, D. C.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Chicago. Annual convention, October 21-23, 1930, Brown Hotel, Louisville, Ky. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—A. W. Large, Gen. Agri. Agt., C. R. I. & P. Ry., Chicago, Ill. Annual meeting, June 18-20, Hotel Duluth, Duluth, Minn.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—Works in co-operation with the American Railway Association, Division IV.—E. H. Fritch, 59 East Van Buren St., Chicago. Next meeting March 10-12, 1931, Palmer House, Chicago. Exhibit by National Railway Appliances Association.

AMERICAN RAILWAY MAGAZINE EDITORS ASSOCIATION.—Miss E. Phillips, N. Y. N. H. & H. Magazine, New Haven, Conn. Next meeting, June, 1931, Philadelphia, Pa.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION, G. G. Macina, C., M., St. P. & P. R. R., 11402 Calumet Ave., Chicago. Annual convention, September 10-12, 1930, Hotel Sherman, Chicago. Exhibit by Supply Association of the American Railway Tool Foreman's Association.—Acting Secretary: H. W. Leighton, Harry W. Leighton Co., 565 W. Washington St., Chicago.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, Union Trust Bldg., Washington, D. C.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York. Railroad Division, Paul D. Mallay, Johns-Manville Corp., 292 Madison Ave., New York.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—H. L. Dawson, 1104 Chandler Building, Washington, D. C. Next meeting, January 27-29, 1931, Philadelphia, Pa.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, District Claim Agent, Northern Pacific Ry., St. Paul, Minn. Annual convention, June, 1931, Toronto, Ont.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Station, Chicago. Semi-annual meeting, June 23, 1930, Hotel Dennis, Atlantic City, N. J. Annual convention. October 21-24, 1930, Hotel Sherman, Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.

ASSOCIATION OF RAILWAY EXECUTIVES.—Stanley J. Strong, Transportation Building, Washington, D. C.

ASSOCIATION OF RAILWAY SUPPLY MEN.—J. W. Fogg, MacLean-Fogg Lock Nut Co., 2649 N. Kildare Ave., Chicago. Meets with International Railway General Foremen's Association.

BOILERMAKERS' SUPPLY MEN'S ASSOCIATION.—Frank C. Hasse, Oxweld R. R. Service Company, 230 N. Michigan Ave., Chicago. Meets with Master Boiler Makers' Association.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—W. H. Lawrence, Johns-Manville Corp., 41st St. and Madison Ave., New York. Meets with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—C. R. Crook, 208 Wilson Ave., N. D. G., Montreal, Que. Regular meetings, 2nd Monday in each month, except June, July and August, Windsor Hotel, Montreal, Que.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—G. K. Oliver, Chicago & Alton, 3001 W. 39th Place, Chicago. Regular meetings, 2nd Monday in month, except June, July and August, Great Northern Hotel, Chicago.

CAR FOREMEN'S ASSOCIATION OF LOS ANGELES—J. W. Krause, Room 299, 610 So. Main St., Los Angeles, Cal. Regular meetings, second Monday of each month, except July, August and September, Room 299, 610 So. Main St., Los Angeles.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—F. G. Wiegman, 720 N. 23rd St., East St. Louis, Ill. Meetings first Tuesday of each month, except July and August, American Hotel Annex, 6th and Market Sts., St. Louis, Mo.

CENTRAL RAILWAY CLUB OF BUFFALO.—W. H. Newman (President), New York Central Railroad, Buffalo, N. Y. Regular meetings, 2nd Thursday each month, except June, July, August, Hotel Statler, Buffalo, N. Y.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—(See Master Car Builders' and Supervisors' Association.)

CINCINNATI RAILWAY CLUB.—D. R. Boyd, 453 E. 6th St., Cincinnati, Ohio. Meetings 2nd Tuesday in February, May, September and November.

CLEVELAND RAILWAY CLUB.—F. L. Frericks, 14416 Alder Ave., Cleveland, Ohio. Meetings, first Monday each month, except July, August, September, Hotel Hollenden, Cleveland.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Annual meeting, September 23-25, 1930, Hotel Morrison, Chicago. Exhibit of International Railroad Master Blacksmiths' Supply Men's Association.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' SUPPLY MEN'S ASSOCIATION.—J. H. Jones, Crucible Steel Company of America, 650 Washington Blvd., Chicago. Meets with International Railroad Master Blacksmiths' Association.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—C. T. Winkless, Room 700, La Salle Street Station, Chicago. Exhibit by International Railway Supply Men's Association.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabasha St., Winona, Minn. Annual Convention, September 16-19, 1930, Hotel Sherman, Chicago.

INTERNATIONAL RAILWAY SUPPLY MEN'S ASSOCIATION.—L. R. Pyle, Locomotive Firebox Co., 310 So. Michigan Ave., Chicago. Meets with International Railway Fuel Association.

MASTER BOILER MAKERS' ASSOCIATION.—A. F. Stiglmeier, 29 Parkwood St., Albany, N. Y. Exhibit by Boiler Makers' Supply Men's Association.

MASTER CAR BUILDERS' AND SUPERVISORS' ASSOCIATION.—A. S. Sternberg, M. C. B. Belt Ry. of Chicago, 7926 South Morgan Street, Chicago. Next convention August 26-28, 1930, Book Cadillac Hotel, Detroit. Exhibit by Supply Men's Association.

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—James B. Walker, 270 Madison Ave., New York, Annual Convention, November 12-15, 1930, Charleston, S. C.

NATIONAL ASSOCIATION OF RAILROAD TIE PRODUCERS.—Roy. M. Edmonds, 1252 Syndicate Trust Bldg., St. Louis, Mo.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, 1014 South Michigan Ave., Chicago. Exhibit at A. R. E. A. convention.

NATIONAL SAFETY COUNCIL.—Steam Railroad Section: W. A. Booth, Can. Nat. Rys., Montreal, Que., Can. Annual Congress, September 29-October 4, William Penn and Fort Pitt Hotels, Pittsburgh, Pa.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2nd Tuesday in month, excepting June, July, August and September, Copley-Plaza Hotel, Boston, Mass.

NEW YORK RAILROAD CLUB.—E. Sumner (President), Asst. to Gen. Supt. M. P. Penna. R. R., Philadelphia, Pa. Regular meetings, 3rd Friday in month, except June, July and August, 29 W. 39th St., New York City.

PACIFIC RAILWAY CLUB.—W. S. Wollner, P. O. Box 3275, San Francisco, Cal. Regular meetings 2nd Thursday in month, alternately in San Francisco and Oakland.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1124 Woodward Building, Washington, D. C. Annual convention, Mexico City, Mex.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 1112 Shoreham Building, Washington, D. C. Next meeting, November, 1930, Commodore Hotel, New York, N. Y.

RAILWAY CAR DEPARTMENT OFFICERS' ASSOCIATION.—(See Master Car Builders' and Supervisors' Association.)

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 1841 Oliver Building, Pittsburgh, Pa. Regular meetings, 4th Thursday in each month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—Edward Wray, 9 S. Clinton St., Chicago. Meets with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—F. W. Venton, Crane Co., 836 S. Michigan Ave., Chicago. Meets with Traveling Engineers' Association.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md. Next meeting, October 21-23, 1930.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meets with Mechanical Division, Purchases and Stores Division and Motor Transport Division, American Railway Association.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Church St., New York. Meets with Telegraph and Telephone Section of A. R. A. Division 1.

RAILWAY TREASURY OFFICERS' ASSOCIATION.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa. Next meeting, June 18-20, 1930, Hotel Cleveland, Cleveland, Ohio.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—T. F. Donahoe, Gen. Supvr. Road, Baltimore & Ohio, Pittsburgh, Pa. Exhibit by Track Supply Association. Next meeting, September 16-18, 1930, Hotel Stevens, Chicago.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Drawer 24, M. P. O., St. Louis, Mo. Regular meetings, 2nd Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, West Nyack (Rockland Co.), N. Y. Meets with A. R. A. Signal Section.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3rd Thursday in January, March, May, June, September and November, Ansley Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—R. G. Parks, A. B. & C. Rv., Atlanta, Ga. Next meeting, July 17, 1930, Mobile, Ala.

SUPPLY MEN'S ASSOCIATION.—E. H. Hancock, Treasurer, Louisville Varnish Co., Louisville, Ky. Meets with A. R. A. Div. V. Equipment Painting Section.

SUPPLY MEN'S ASSOCIATION.—Bradley S. Johnson, W. H. Miner, Inc., 667 The Rookery Building, Chicago. Meets with Master Car Builders' and Supervisors' Association.

TRACK SUPPLY ASSOCIATION.—L. C. Ryan, Oxweld Railroad Service Co., Carbon & Carbide Building, Chicago. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, 1177 East 98th St., Cleveland, O. Annual meeting, September 23-26, 1930. Hotel Sherman, Chicago. Exhibit by Railway Equipment Manufacturers' Association.

WESTERN RAILWAY CLUB.—W. J. Dickinson, 343 So. Dearborn St., Chicago. Regular meetings 3rd Monday each month, except June, July and August.

Traffic

The Allegheny Regional Advisory Board will hold its next meeting at Hotel Morgan, Morgantown, W. Va., on Thursday, June 12. The Morgantown Chamber of Commerce and other organizations are planning to entertain the members with sightseeing trips and other diversions.

The Missouri Pacific, in an effort to promote the building of more farm storehouses for grain, is operating a special grain bin exhibit train through 25 Kansas towns during the early part of June. The Kansas State Agricultural college and the Southwestern Wheat Improvement Association are co-operating with the railroad in the exhibit, which displays modern bins of approved types.

The Union Pacific will add open top observation cars to the Portland and Continental limiteds on June 7, as a feature of summer vacation travel through the Columbia River gorge country between Portland, Ore., and the Dalles. The new service, which is in addition to regular observation car service, is offered to all passengers holding standard sleeping car space. The open top cars seat 92 passengers and are upholstered in leather.

The Nashville, Chattanooga & St. Louis has added to its passenger service between Nashville, Tenn., and Memphis, a new train which it has named the Volunteer. This train operates on a 6-hr. 15-min. schedule, which is 1 hr. and 30 min. faster than the present schedules. The train leaves each terminal at 2:45 p.m. and arrives at the opposite terminal at 9 p.m. It carries de luxe day coaches and a combination Pullman cafe-parlor car equipped with dining room space, a buffet and a soda fountain.

West Coast Speed Improved

Following the reduction in schedules between Chicago and the Pacific coast on June 1, the Southern Pacific and the Great Northern have improved schedules between Portland and San Francisco and between Seattle and Vancouver respectively. The changes made by the Southern Pacific between Portland and San Francisco, 771 miles, are effective June 15, apply to four trains and effect a saving of as much as 50 min. The schedule of the Shasta Limited will be cut 50 min. southbound and 40 min. northbound, thereby establishing a through time of 25 hr. 40 min. The Cascade Limited's time will be 21 hr. 35 min. southbound, and 21 hr. 40 min, northbound, a reduction of 25 min. and 15 min. respectively. The reduction on the Klamath amounts to 50 min. southbound and 20 min. northbound, thereby providing a lapsed time of 24 hr. and 30 min. southbound and 24 hr. northbound. The West Coast Limited will run from Portland to San Francisco in 26 hr. and 35 min., or 30 min. quicker than at present. The northbound schedule remains unchanged, the lapsed time being 26 hr. The Southern Pacific will also shorten passenger train schedules between San Francisco and Los Angeles, the reductions amounting to as much as 30 min.

The Great Northern, effective June 1, reduced the schedule of the International Limited between Seattle and Vancouver 30 min., thus making the time 5 hr. and 15 min. for the 155 miles. The American now operates between Vancouver and Seattle in 5 hr., a reduction of 40 min.

Airplanes to Washington Every Hour

Miss Amelia Earhart, well-known flyer, announces in New York that plans are in progress for establishing an airplane passenger line between New York and Washington, next August, on which planes will leave each city every hour from 8 a.m. to 5 p.m., and make the trip in about two and one-half hours. The statements regarding the speed are somewhat vague but the fastest schedule mentioned is 2 hours, 35 minutes, including the trip to or from the flying field at the beginning and at the end of each journey. This contemplates flying time of one hour, 45 minutes, or about 120 miles an hour. The transportation company is to be known as the New York-Philadelphia-Washington Airway Corporation, and Miss Earhart is to be vice-president. The president is Nicholas Ludington. It is proposed to make the fare the same as that by rail in a Pullman car.

Bill of Lading and Livestock Contract Amended

For the purpose principally of making changes necessitated by the amendments of March 4, 1927 to Section 3(2) of the interstate commerce act relating to transportation charges, and by the amendment of April 23, 1930 to Section 20(11) relating to claims and suits, the carriers, parties to Consolidated Freight Classification No. 6, Agent D. T. Lawrence's I. C. C.-O. C. No. 50, Agent E. H. Dulaney's I. C. C. No. 34, Agent R. C. Fyfe's I. C. C. No. 19, by Supplement No. 1, issued May 23, and filed with the Interstate Commerce Commission on May 24, to become effective August 1, 1930, have amended the domestic bill of lading and the livestock contract currently in use. The changes are:

Section 2(b) of the contract terms and conditions of the domestic bill of lading and Section 2 (c) of the contract terms and conditions of the livestock contract, both relating to claims and suits, are changed for the purpose of meeting the amendment of April 23, 1930, to Section 20(11) of the interstate commerce act.

Section 7 of the contract terms and conditions of the domestic bill of lading and Section 3 of the contract terms and conditions of the livestock contract, both relating to transportation charges, are changed for the purpose of meeting the amendment of March 4, 1927, to Section 3(2) of the interstate commerce act.

Section 9(d) of the contract terms and conditions of the domestic bill of lading and Section 5(d) of the contract terms and conditions of the livestock contract, in so far as they refer to general average, are changed for the purpose of adopting the change in the export bill of lading relating to general average, and prescribed by the commission in *Export Bill of Lading*, 156 I. C. C. 188.

On the face of the domestic bill of lading, under routing directions, the words (Delivering Carrier.) are removed from the parentheses and placed on the line above. Also on the face of the domestic bill of lading the provision about payment of charges by the consignee is prefaced by the words "Subject to Section 7 of conditions," and the words "(See section 7 of conditions.)", at the bottom, are eliminated. Similar changes are made in the livestock contract.

The commission has announced that objections, if any, including a statement of ground or grounds of objection, to these changes in the domestic bill of lading and the livestock contract, must be filed with the commission on or before July 1.

Illinois Coal Rate Hearing

A hearing on intrastate rates on bituminous coal between points in Illinois was opened at Chicago on June 2 before representatives of the Interstate Commerce Commission and the Illinois Commerce Commission. Representatives of the railroads contend that rates should be placed on a level with tariffs approved by the Interstate Commerce Commission in 1928, which are somewhat higher than the present rates. They also testified that the present rates, which the Illinois Commerce Commission put in effect a year ago, discriminate against interstate commerce and have resulted in losses to the carriers. The Illinois District Traffic League, a voluntary organization of shippers and receivers of freight, located in the Illinois Freight Association territory, asked the Interstate Commerce Commission to require the railroads to file with the Commission information showing the cost of transporting coal between representative points in Illinois.

FOREIGN ENGINEERING GROUPS are now engaged in the construction of several hundred miles of railway in Turkey, in accordance with the railway program adopted in 1925, Department of Commerce reports state. The program includes the construction of some 2,500 kilometers (1,553 miles) of new lines, and the acquisition, control and operation by the government of the more important privately-owned railways in the country. At present 1,282 kilometers (797 miles) are under construction. Approximately 180 kilometers are being built by the Turkish government, 700 kilometers by a Swedish group, 380 kilometers by a German concern and 22 kilometers by a native company.

The total length of railroads now in operation in Turkey, not including lines planned or under construction, is 5,216 kilometers (3,241 miles), of which 2,554 kilometers are controlled by the government and 2,662 kilometers by private interests. There are five gages: 5 ft.; 4 ft. 8½ in.; 3 ft. 3 in.; 2 ft. 6 in. and 2 ft.

Foreign

Car Ownership and Standardization Discussions in Britain

The Federation of British Industries has recently issued a statement setting forth its position in connection with present discussions of ownership, pooling and standardization of freight cars in service on railways of Great Britain. A statement of the railways in this connection was made in a recent issue of Railway Newsletter, official publicity pamphlet of the British Railways Press Bureau, and summarized in the *Railway Age* of November 30, 1929, page 1307.

The statement of the federation summarizes its position under three heads. As to the present system of car ownership the federation "is definitely of the opinion that the present system of car ownership should be continued on the ground that there is no adequate evidence that the abolition of private ownership would confer any appreciable benefit on any branch of industry. On the contrary, there is much evidence which would tend to show that it would create not only greater cost of transport of coal, but a shortage of cars for mineral traffic and consequent dislocation of trade."

On the question of pooling, the findings of the federation are that "the creation of compulsory pools would result in the operations of the collieries being practically controlled by the railway companies, or other controlling body . . . . It would deprive the colliery owner of the disposition of its cars and he would be at the mercy of the railway companies or other controlling body as to the number of cars supplied and when supplied."

On the third point, the standardization of cars, the federation finds that complete standardization of rolling stock must be preceded by the standardization of railway terminals and other facilities for the handling of such standardized equipment.

New Station Under Construction at Milan

To relieve the inadequacy of the existing Central station at Milan (Italy) the Italian State Railways are building a new passenger terminal on an unrestricted site some 700 yds. north of the present station, at a cost of over $50,000,000. The building itself, which will be in the classical style, is to be U-shaped, with passenger accommodations and some offices in a main building 670 ft. long at the head of the trainshed and additional offices located in two wings 500 ft. long on either side of the trainshed. The shed itself, which is covered by a five-span glass roof, contains 22 main tracks and two switching tracks, each served by two platforms from 1,000 ft. to 1,070 ft. in length. One platform for each track will be 24 ft. wide and reserved exclusively for passengers, while the other, 13 ft. wide, will be used for baggage, mail and train supplies. The eight tracks in the center of the shed will be used exclusively by express and de luxe trains, while the outer groups are for local and suburban trains. Engine terminals and coach yards are grouped north of the station.

The most interesting feature of the new terminal, which will be one of the largest in Europe when completed, is the use of elevated tracks and of several different levels. Ticket offices, baggage rooms, etc., are located at street level under the main concourse, which, with the tracks, is raised approximately 25 ft. above the ground. All baggage, mail, express and train supplies, however, are handled at street level, in space provided directly under the trainshed and connected with the main tracks by elevators capable of raising loaded freight cars. Restaurants, barber shops and other passenger conveniences are on a still lower level, under the concourse and ticket offices.

Chilean Railroad Development Progresses

Marked progress has been made in the field of transportation during recent years by the Republic of Chile, according to a study of the railroads of that country just issued by W. Rodney Long, Transportation division, United States Department of Commerce. As a result of the introduction of modern practices, the survey shows, the republic has improved mechanical efficiency, operating methods and labor conditions on its various systems, so that it now possesses some of the best operated railway lines in Latin America.

At present, the total length of steam roads in Chile is approximately 11,000 kilometers (about 6,831 miles), or nearly double the mileage of 20 years ago. While construction has proceeded steadily since the beginning of the century, the greatest period of construction was between 1911 and 1915, when some 2,500 kilometers (1,553 miles) of new line were built. A construction program inaugurated two years ago calls for the completion, within the next six years, of 900 additional kilometers (559 miles) of track, at a cost of about 183,000,000 pesos (approximately $22,143,000). State-owned lines account for nearly 70 per cent of the total mileage; British lines for about 22 per cent, and American-owned lines for the remainder.

Total capital investments in Chilean railroads in 1927, Mr. Long's report shows, amounted to 1,800,000,000 pesos ($217,800,000), of which amount Chilean capital in government-owned enterprises represented 46 per cent, British investments 42 per cent and North American capital slightly less than three per cent.

Although railroad equipment is now manufactured in Chile, the bulk of the country's requirements are obtained from outside sources, with the United States as the outstanding producer. During the 10 years ending in 1927, total Chilean imports of railroad equipment were valued at 402,000,000 pesos ($48,642,000).

Equipment and Supplies

Locomotives

THE SOUTH AFRICAN IRON & STEEL CORPORATION, LTD., Pretorious, South Africa, has ordered one 4-8-2 type locomotive from the Baldwin Locomotive Works.

Freight Cars

THE MEXICAN RAILWAY is inquiring for 85 box cars of 30 tons' capacity, 15 auto box cars and 15 flat cars of 40 tons' capacity and 4 caboose cars.

THE LEHIGH NAVIGATION COAL COMPANY has ordered seven air dump cars of 30 cu. yd. capacity from the Magor Car Corporation.

THE UNITED FRUIT COMPANY has ordered 25 banana cars from the Magor Car Corporation. Inquiry for this equipment was reported in the *Railway Age* of May 17.

Passenger Cars

THE RICHMOND, FREDERICKSBURG & POTOMAC is inquiring for two coaches.

CHICAGO & NORTH WESTERN.—See Union Pacific.

THE MEXICAN RAILWAY is inquiring for four steel coaches.

THE ERIE is inquiring for eight through line coaches seventy feet long.

THE UNION PACIFIC is inquiring for 14 chair cars of which four will be used by the Chicago & North Western, 10 baggage cars and 1 baggage and mail car.

THE MISSOURI-KANSAS-TEXAS has ordered three dining cars from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of April 19.

THE CHICAGO, BURLINGTON & QUINCY has ordered five gas-electric rail motor cars from the Pullman Car & Manufacturing Corporation, the 400 hp. power plant to be furnished by the Electro-Motive Company.

ERIE.—The 10 gas-electric rail motor cars ordered from the Bethlehem Steel Company as reported in the *Railway Age* of May 31, will be equipped with Electro-Motive Company's power plants; each car will have two 300-hp. engine units.

Signaling

THE LOUISVILLE & NASHVILLE has contracted with the Union Switch & Signal

Company for the installation of an electric interlocking plant, type F, at Thirteenth street, Birmingham, Ala.; 63-lever machine, Model 14. The machine will operate 30 semaphore signals and 58 switch movements. This plant is to be installed in connection with the extensive separation of grades, in which enterprise are interested the City of Birmingham and the Southern Railway.

THE CANADIAN PACIFIC has ordered from the Union Switch & Signal Company material for electro-mechanical interlocking at Richmond street, London, Ontario.

Machinery and Tools

THE LEHIGH VALLEY has ordered one automatic locomotive washing machine for use at Sayre, Pa., from the Transportation Equipment Corporation, New York.

Iron and Steel

THE PENNSYLVANIA has ordered 400 tons of steel for a bridge at Seward, Pa., from the American Bridge Company.

THE CHESAPEAKE & OHIO has ordered 125 tons of steel for a bridge at Mulligan, Ohio. from the Mt. Vernon Bridge Company

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AFTER SEVERAL MONTHS of negotiations, the rolling stock manufacturers of Europe have concluded an agreement to form an international cartel, according to a report received in the Department of Commerce. The main purpose of such a cartel is to avoid the detrimental effects of competition in export markets, which have been keenly felt in recent years, particularly in connection with deals in Holland, Egypt, Turkey and South America, where an agreement between the European manufacturers would have been much to their advantage.

A tentative agreement was reached last January by the German, Belgian and French manufacturers. Since that time the Italian government has given its support, so that the Italian industry is also represented, while reconciliation of Czechoslovakian and Austrian claims has made it possible to secure the adherence of the rolling stock industry in those two countries. British manufacturers have not joined the cartel.

It is reported that the international agreement in regard to export quotas has been concluded on the following basis: Belgium to obtain about 32 per cent of the total; Germany, 28.6 per cent; France, 13.5 per cent; Italy, rather more than 10 per cent; Czechoslovakia and Hungary, a little over six per cent; Austria about two per cent, and Switzerland, about one per cent.

The cartel has been formed for one year, with headquarters in Paris. The general secretary and a delegate from each country will reside there, in order that meetings may be called rapidly, if necessary.

Supply Trade

A. H. Purdom has resigned from the railroad sales department of the **Wood Conversion Company,** Chicago, and will open an office to handle railway supplies.

James J. Crawford has been appointed representative of the Railway Appliance division of the **American Fork & Hoe Company,** with headquarters in Louisville, Ky.

The Air Reduction Sales Company has moved its executive offices from 342 Madison avenue to the Lincoln building, Forty-second street opposite the Grand Central, New York City.

The Superheater Company has moved its offices from 17 East Forty-second street to the Lincoln building, 60 East Forty-second street, New York City.

The Morrison Railway Supply Corporation, Buffalo, N. Y., has moved its Chicago offices to 650 Railway Exchange building. **R. B. Alfonte** has been appointed assistant to the manager of the Chicago branch.

Paul E. Illman has been elected vice-president of **Dwight P. Robinson & Company, Inc.,** Philadelphia, Pa. Mr. Illman graduated from Harvard in 1909, was formerly vice-president of the Peoples Bank of Buffalo and has lately been connected with S. W. Straus & Company, and Charles F. Noyes Company.

Lawford Howard Fry, metallurgical engineer of the Standard Steel Works Company, Burnham, Pa., has resigned and has been appointed railway engineer of the **Edgewater Steel Company,** Pittsburgh, Pa. Mr. Fry was born at Richmond, P. Q., Canada, on June 16, 1873. He attended private schools in the United States, Canada and England, and the City and Guilds of London Technical College, 1893; University of Goltingen, 1894, and Hannoversche Technische Hochschule, 1894-97. In 1897 he became employed in the erecting shop of the Baldwin Locomotive Works and in 1904 was appointed engineer of tests. From 1904 until 1913 he was technical representative of the Baldwin Locomotive Works in Europe, during the latter year becoming metallurgical engineer of the Standard Steel Works Company. During 1909 Mr. Fry became an affiliate member of the American Railway Master Mechanics' Association, now Division V—Mechanical, American Railway Association. He is a member of the American Society of Mechanical Engineers; Institution of Mechanical Engineers; Institution of Civil Engineers; Institution of Locomotive Engineers; American Society for Testing Materials; Iron and Steel Institute, and American Iron and Steel Institute. He is the author of "A Study of the Locomotive Boiler" and numerous technical papers.

Lawford Howard Fry

Obituary

A. L. Greenabaum, vice president O. F. Jordan Company, East Chicago, Ind., died at Chicago on June 4 after an extended illness.

Boone V. H. Johnson, sales agent of the General Steel Castings Corporation, Granite City, Ill., and formerly vice-president and sales agent of the Commonwealth Steel Company, died at Barnes hospital, St. Louis, Mo., on June 2, following an illness of ten weeks. Mr. Barnes had been connected with the Commonwealth Steel Company for 12 years.

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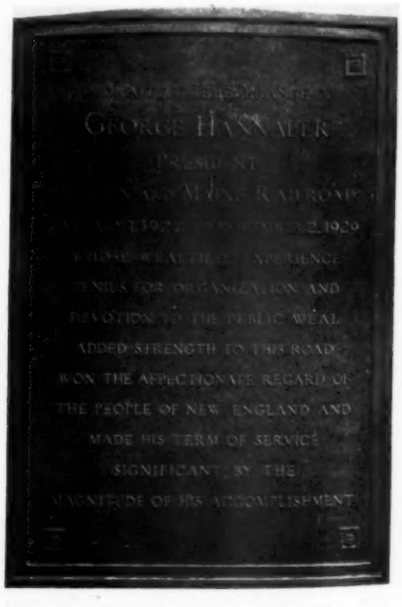

The Hannauer Memorial Tablet

Unveiled on June 5, this bronze panel, 24 sq. ft. in extent, has been placed in the North station, Boston, Mass., by the directors of the Boston & Maine as a memorial to the late President George Hannauer. It is located in the center of the concourse, between the entrance to tracks 4-5 and 6-7.

Construction

ALBANY PORT DISTRICT COMMISSION.—The Port District Commission of Albany, N. Y., has awarded to Henry Dumary, Albany, a contract for the construction of about 30,000 ft. of railroad track on Westerlo Island in connection with the completion of improvements at the Port of Albany. The amount of the contract is $130,405. The track facilities worked out by the Port Commission call for a loop track system feeding from the main lines of the West Shore and the Delaware & Hudson to the dock front.

ATCHISON, TOPEKA & SANTA FE.—The Los Angeles (Cal.) board of public works receives bids until June 11 for the construction of a street subway under the tracks of this company at Sixth street, Los Angeles.

BALTIMORE & OHIO.—Automatic block signals, extension of side tracks and other improvements are to be carried out on the line between Glenwood, Pa., and Wheeling, W. Va., to cost about $1,223,000. Between Gilkeson, Pa., and Wheeling, 41.5 miles, dispatcher control is to be installed. Between Glenwood Junction and Gilkeson, about 18 miles, the new track to be laid will aggregate 5.5 miles, providing double track between these points. At Clokey there will be a new siding to hold 80 cars. The Glenwood roundhouse will be enlarged to accommodate Mallet locomotives.

CHESAPEAKE & OHIO.—A contract for the construction, exclusive of machinery, of a modern fireproof coal pier at Newport News, Va., has been awarded by this company to the W. Horace Williams Company of New Orleans, La. The new pier, one of the largest projects provided for in the 1930 budget of the Chesapeake & Ohio, is to be located on the waterfront, on property owned by the railway company near Little Boat Harbor, about one-half mile east of present pier No. 9. It will be 1,000 ft. long and 70 ft. wide and will consist of a concrete dock supported on concrete piles. After machinery is erected the pier will be capable of loading coal on any ship now in ocean trade economically and with a minimum amount of breakage. Ample supporting yards will be provided back of the pier, while a 35-ft. channel will be dredged to deep water. Work will begin within the next few days and construction under the contract with the Williams Company is expected to be completed in about seven months.

CHESAPEAKE & OHIO.—This company will build a 6,300-ft. single-track tunnel at an estimated cost of $2,200,000 to parallel the old Big Bend tunnel between Big Bend, W. Va., and Hilldale, about nine miles east of Hinton. A contract for the work has been let to Haley, Chisholm & Morris, Charlottesville, Va. The construction of the new tunnel with its approaches will provide a double-track between Talcott and Hilldale, a distance of two miles, which hitherto has been single track.

CHICAGO, BURLINGTON & QUINCY.—A contract has been awarded to John Lightholder, Streator, Ill., for the construction of a new passenger station and a new freight station at Streator. A contract for the construction of a 900-ton reinforced concrete automatic electric coaling station at Galesburg, Ill., has been let to Fairbanks, Morse & Co., Chicago.

CINCINNATI UNION TERMINAL.—A contract for the construction of concrete masonry for the new lines of the Chesapeake & Ohio and the Cincinnati, New Orleans & Texas Pacific into the Union terminal at Cincinnati, Ohio, has been let to the Kerpen Construction Company, Cincinnati, at a total cost of about $150,000.

DELAWARE & HUDSON.—Elimination of the Vials crossing of this company's tracks north of Westport, N. Y., by carrying the highway over the tracks 375 ft. north of the present crossing at an estimated cost of $128,000 has been directed by the Public Service Commission of New York.

ERIE.—A contract for the construction of a grade crossing elimination structure at Cleveland, Ohio, has been awarded to the Stevens Construction Company, Cleveland.

ILLINOIS CENTRAL.—A contract for the construction of a reinforced concrete ice loading platform with dimensions of 14 ft. by 1,484 ft. at Waterloo, Iowa, has been awarded to the Zitterell-Mills Construction Company, Webster City, Iowa.

LOUISVILLE & NASHVILLE.—This company has applied to the War Department for permission to reconstruct the bridge over the Cumberland river at Nashville, Tenn., at a cost of about $220,000.

MAINE CENTRAL.—This company has awarded a contract for the reconstruction of a portion of the existing wharves and the building of additions to wharves at Portland, Me., to the Merritt-Chapman & Scott Corporation, New York City, at an approximate cost of $700,000. This work is part of this company's $2,000,000 program of port and terminal development at Portland, and is in addition to work to be done under a contract reported in the *Railway Age* of February 1.

MISSOURI PACIFIC.—A contract for the construction of a two-story reinforced concrete warehouse at Kansas City, Mo., has been let to the Patti Construction Company, Kansas City, at a cost of about $50,000.

NEW YORK CENTRAL.—The low bid of the Walsh Construction Company, Syracuse, N. Y., $42,329, for the elimination of the Main street crossing of the New York Central south of New Hamburg, N. Y., has been approved by the Public Service Commission of New York and the railroad has been directed to award the contract.

NEW YORK CENTRAL—DELAWARE & HUDSON.—The Public Service Commission of New York has approved a plan of interlocking signals to be installed at the crossing of the Troy and Schenectady branch of the New York Central and the Schenectady-Mechanicville branch of the Delaware & Hudson in Schenectady, N. Y. Under the new plan the interlocking tower now controlling the crossing will be dismantled and train movements over the crossing will be governed by signals controlled from Tower 8, east of the crossing. Track changes to be made at the same time will eliminate one track of the New York Central leaving one main track of that road crossed by two D. & H. tracks.

PACIFIC GREAT EASTERN.—A contract has been awarded to W. C. Arnett for grading for the construction of 5.2 miles of new line and a new yard at Lillooet, B. C., at a cost of about $100,000. It was reported in the *Railway Age* of May 10 that bids for this work were being received.

PENNSYLVANIA.—This company has recently awarded contracts as follows: To the John F. Casey Company, Pittsburgh, Pa., for the construction of a side track connection to the Oakley factory colony, Cincinnati, Ohio, at a cost of $169,000; to the same company for grading, masonry, paving, etc., from the Allegheny river bridge to Twentieth street, Pittsburgh, at a cost of approximately $62,000; to the Nicholson Company, Inc., New York, for the construction of circular reinforced concrete coal pockets and auxiliary equipment at Gray's Ferry avenue and Alter street and at Twenty-Ninth street and Sedgley avenue, Philadelphia, Pa., at estimated costs of $185,000 and $38,000, respectively; to the Frederick Snare Corporation, New York, for the placing of deck slabs on bridges Nos. 4.21 and 4.25 over the Hackensack river west of Marion, N. J., at a combined cost of $148,400; to the Mellon Construction Company, Chicago, for the construction of a wye connecting track between the Pennsylvania's Cincinnati and Logansport divisions and the reconstruction of a bridge over the Mississinewa river at Ridgeville, Ind., at a total cost of about $85,000; to the Ferguson & Edmondson Company, Pittsburgh, for the construction of an overhead highway bridge and an undergrade pedestrian subway at Seward, Pa., at a cost of $62,000; to the Jobson-Gifford Company, New York, for the removal of the superstructure of a jump-over bridge at Colonia, N. J., at a cost of $38,600; to Sinclair & Grigg, Philadelphia, for the extension of elevated tracks east of Twenty-Seventh street and Gray's Ferry avenue to Washington avenue and the construction of a bridge over Twenty-Sixth street, Philadelphia, at a total cost of approximately $32,000, and to the Bates & Rogers Construction Company, Cleveland, Ohio, for the construction of platforms, shelters, sidewalks and driveways at the Newark, Ohio, passenger station, at an estimated cost of $29,000.

SOUTHERN PACIFIC—The California highway commission plans the construction of highway subways under the tracks of this company at Emigrant Gap, Cal., and Cottonwood.

Financial

CANADIAN NATIONAL.—*Equipment Trust.*—A syndicate of eighteen Canadian and American banking houses headed by Halsey, Stuart & Co., is offering $15,750,000 of 4½ per cent equipment trust, series L, certificates of this company, maturing in installments from 1931 to 1945, at prices to yield from 4.15 to 4.85 per cent.

CHICAGO & ALTON.—*Stockholders Petition.*—A group of common and preferred stockholders of this railroad petitioned the Federal Court at Chicago on June 4 to suspend the foreclosure order entered by the court recently. The stockholders charged that their rights have not been properly protected and that they have been discriminated against in favor of the bondholders of the road.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue and sell $1,000,000 of first and general mortgage 5 per cent bonds to Potter & Co, and Harris, Forbes & Co., at 101.75 and interest.

CHICAGO, ROCK ISLAND & PACIFIC.—*Equipment Trust.*—The First National Bank and Salomon Bros. & Hutzler are offering $14,040,000 of this company's 4½ per cent equipment trust, series Q, certificates, maturing in installments from 1930 to 1945, at prices yielding from 3.5 to 4.6 per cent.

CHICORA & NORTHWESTERN.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Chicora to Clara, Miss., 8.9 miles.

ERIE.—*Equipment Trust Certificates.*—This company has applied to the Interstate Commerce Commission for authority for an issue of $6,690,000 of 4½ per cent equipment trust certificates, to be offered for competitive bidding.

FLORIDA CENTRAL & GULF.—*Abandonment.*—Examiner M. S. Jameson has recommended in a proposed report that the Interstate Commerce Commission approve this company's application for authority to abandon its line from Inglis to Hernando, Fla., 29.54 miles.

GREAT NORTHERN.—*Abandonment.*—In an application to the Interstate Commerce Commission this company asks authority to abandon its line between Molson and Oroville, Wash., 23.49 miles.

GULF, MOBILE & NORTHERN.—*New Director.*—Ward C. Castle, executive vice-president of the National Bank of the Republic, Chicago, has been elected a member of the board of directors.

ILLINOIS TERMINAL.—*Acquisition.*—The Interstate Commerce Commission on June 4 approved the acquisition by this company of control, by lease, of the railroad properties of the Alton & Eastern, the St. Louis & Alton, and the O'Fallon freight line of the East St. Louis & Suburban.

KAYDEROSS.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon its entire line extending from Ballston Spa., N. Y., to Middle Grove, 12 miles.

MINNEAPOLIS, ANOKA & CUYUNA RANGE RAILROAD.—*Acquisition.*—The Interstate Commerce Commission has authorized this company to acquire and operate the entire line of railroad formerly owned and operated by the Minneapolis, Anoka & Cuyuna Range Railway, extending from Minneapolis, Minn., to Anoka, 20.7 miles. The new company acquired the line from a purchaser who bought the property at a receiver's sale.

NEW YORK CENTRAL.—*Equipment Trust.*—The Interstate Commerce Commission has authorized this company to assume obligation and liability in respect of $3,945,000 of its 4½ per cent equipment trust of 1930 certificates, maturing in installments from 1931 to 1945. The issue was authorized for sale to the highest bidder, Salomon Brothers & Hutzler, at 99.71, making the average annual cost to the railroad 4.5456 per cent.

NEW YORK, CHICAGO & ST. LOUIS.—*Application to Acquire W. & L. E. Withdrawn.*—At the request of this company the Interstate Commerce Commission has dismissed its application for authority to acquire control of the Wheeling & Lake Erie, which had been assigned for hearing on June 9 at the same time as the applications of the Wabash and New York, Chicago & St. Louis for similar authority. Counsel for the Nickel Plate in a letter to the commission said that the application was not in harmony with the commission's consolidation plan and that it is its intention to make, or join in the making of, an application to the commission for a modification of the plan; therefore it seemed appropriate to withdraw the pending application until such new application may be presented. It has been expected that an application would be filed with the commission, probably by the Chesapeake & Ohio, for authority to group into a single system the Van Sweringen roads in the East, most of which were grouped into a single system in the commission's plan, together with a request for modifications to include the Wheeling & Lake Erie and other properties not so included in the plan.

The Nickel Plate also filed with the commission motions to dismiss the proceedings on the applications of the Wabash and the Pittsburgh & West Virginia for authority to acquire control of the Wheeling & Lake Erie, which were promptly denied by Division 4 of the commission on June 4. The motion as to the P. & W. V. application stated that it had failed to show any present or probable future ability to take advantage of any authority which might be granted by the commission or to secure control of the stock on any terms, and that as to the Wabash denied that the certificates of deposit representing the controlling interest in the Wheeling stock owned by the Nickel Plate were available for acquisition by the Wabash. Both motions also opposed the applications on the ground that the Wabash and P. & W. V. are controlled indirectly by the Pennsylvania and that acquisition of control of the Wheeling by either would be a step, and perhaps an irrevocable step, toward including the Wheeling, and other roads assigned in the commission's consolidation plan to the Wabash system, in the Pennsylvania system. The Nickel Plate also contended that the Wheeling should be assigned to the same as the Nickel Plate and referred again to its intention to make, or join in the making, of an application which would be accompanied by a motion for a modification of the commission's plan.

PENNSYLVANIA.—*Lease of W. J. & S. S. Approved.*—The Interstate Commerce Commission on June 4 announced its approval, subject to certain conditions, of the acquisition by the Pennsylvania of control of the railroad properties of the West Jersey & Seashore under lease.

READING.—*Equipment Trust.*—The Interstate Commerce Commission has authorized this company to assume obligation and liability in respect of $7,080,000 of its 4½ per cent series M equipment trust certificates, maturing in installments from 1930 to 1945. The issue is authorized for sale to the highest bidder, Edward Lowber Stokes & Co., at 99.8375, making the average annual cost to the railroad 4.5263 per cent.

TENNESSEE & NORTH CAROLINA.—*Acquisition.*—The Interstate Commerce Commission has authorized the Smoky Mountain, a subsidiary of this company, to acquire 1.2 miles of line in Sevierville, Tenn., being the unabandoned part of the Pigeon River Railroad.

WHEELING & LAKE ERIE.—*Motion to Dismiss Acquisition Applications Denied.*—The Interstate Commerce Commission has denied the motion filed by this company asking it to dismiss the applications filed by the Wabash and the Pittsburgh & West Virginia for authority to acquire control of the Wheeling on the ground that the two companies are controlled by the Pennsylvania and that the commission's consolidation plan contemplated putting them in an independent system. The motion also applied to the Nickel Plate application but the latter was withdrawn. The Wabash, in its answer to the W. & L. E. motion, said there was no reason why, pending the outcome of the commission's inquiry and action with respect to ownership of Wabash stock by the Pennsylvania Company, "the independence and full legal faculties of the Wabash in its application to the commission should be abridged, suspended or in any way qualified." It added that its application is itself "the assertion of its own freedom from improper domination."

Average Prices of Stocks and of Bonds

	June 3	Last week	Last year
Average price of 20 representative railway stocks.	126.43	127.95	136.61
Average price of 20 representative railway bonds..	93.76	93.53	90.26

Dividends Declared

Ann Arbor.—Common initial, $6.00, annually; Preferred initial, $5.00, annually, both payable June 10 to holders of record June 7.

Buffalo & Susquehanna.—Preferred, $2.00, semi-annually, payable June 30 to holders of record June 14.

Chesapeake & Ohio.—Common, $2.50, quarterly, payable July 1 to holders of record June 11.

Erie.—First and Second Preferred, 2 per cent, payable June 30 to holders of record June 14; First and Second Preferred, 2 per cent, payable December 31 to holders of record December 13.

Great Northern.—2½ per cent, payable August 1 to holders of record June 25.

Gulf, Mobile & Northern.—Preferred, 1½ per cent, quarterly, payable July 1 to holders of record June 14.

New York, New Haven & Hartford.—Common, $1.50, quarterly; Preferred, $1.75, quarterly, both payable July 1 to holders of record June 7.

Pere Marquette.—Common, $1.50, quarterly, payable June 30 to holders of record June 9; Prior Preferred and Preferred, $1.25, quarterly, payable August 1 to holders of record July 5.

Pittsburgh & West Virginia.—$1.50, quarterly, payable July 31 to holders of record July 15.

St. Louis Southwestern.—Preferred, 1¾ per cent, quarterly, payable June 30 to holders of record June 12.

Texas & Pacific.—Common, 1¾ per cent, quarterly; Preferred, 1¾ per cent, both payable June 30 to holders of record June 14.

Wabash.—Preferred A, 1¾ per cent, quarterly, payable August 25 to holders of record July 25.

STEAM AND ELECTRIC - LOCOMOTIVE SANDERS.—An eight-page booklet issued by the Viloco Railway Company, Chicago, describes the latest Viloco sanders for steam and electric locomotive service. After pointing out that these sanders are the result of sander-building experience extending over nearly a quarter of a century, the booklet illustrates clearly how the sanders are built and operated. Single, double, triple and quadruple type sanders are shown, also a booster sander, an improved duplex engineers' valve, a sander trap cover, and an automatic rail washer. Line drawings show the application of Viloco sanders to various classes of locomotives.

* * *

On the New Haven at East Lyme, Conn.

Railway Officers

Accounting Department Changes on C. N. R.

Effective June 1, J. M. Rosevear, general comptroller of the Canadian National at Montreal, Que., and C. E. Friend, assistant general comptroller, with the same headquarters, retired and the following appointments were made: J. B. McLaren, comptroller of the central region at Toronto, Ont., will serve as comptroller of the system; T. H. Cooper, general auditor at Montreal, has been promoted to assistant comptroller, general accounts; A. C. Egan, comptroller at Winnipeg, Man., will serve as assistant comptroller, disbursements; W. S. Harrison, general auditor of revenues at Montreal, has been advanced to assistant comptroller of revenues; F. Horton, general auditor at Detroit, Mich., has been promoted to assistant comptroller of subsidiary companies, all with headquarters at Montreal. J. F. Aitchison, assistant comptroller will serve as regional auditor at Toronto; T. J. Gracey, assistant comptroller, as regional auditor at Winnipeg; G. N. Palmer, comptroller, as regional auditor at Moncton, N. B., and C. B. Bird as auditor at Detroit.

J. M. Rosevear commenced his railway career as a junior clerk in the mechanical accounting department at Montreal in 1885, and served in various offices until 1906 when he became traveling auditor

J. M. Rosevear

and later in the same year chief clerk of expenditures in the office of the auditor of disbursements. Mr. Rosevear succeeded to the position of auditor of disbursements in 1908, was appointed general auditor in 1918, comptroller in 1919 and general comptroller of the Canadian National system in 1923, the position from which he retires.

C. E. Friend entered railroad service on January 2, 1894, as secretary to the traffic manager of the Canadian Pacific at Winnipeg, in which capacity he served until October, 1896, when he became connected with the Canadian Northern (now Canadian National) as stenographer to the superintendent at Winnipeg. He was appointed to the position of accountant in June of the following year and in June, 1901, became auditor. In November, 1910, Mr. Friend was advanced to general auditor, and was appointed comptroller at Toronto in November, 1918. His jurisdiction was extended to include the Grand Trunk Pacific in August, 1920, and in February, 1923, he was promoted to assistant general comptroller of the C. N. R. system at Montreal, in which capacity he served until his retirement.

J. B. McLaren, who became comptroller of the system at Montreal, entered railroad service in 1892 as an office boy at Brockville, Ont., and became a clerk at that point in 1897. In 1899 he was appointed export freight clerk at Durand, Mich., and in turn served as accountant, chief clerk and cashier and agent until 1901 when he was transferred to Montreal as clerk. He was appointed traveling auditor in 1905 and assistant chief clerk in 1907. In 1913 Mr. McLaren became auditor of freight accounts and in 1916 he was appointed auditor of revenues, which position he held until 1919 when he was advanced to general auditor. In February, 1923, Mr. McLaren was promoted to comptroller of the central region with headquarters at Toronto, the position he vacates to become comptroller of the Canadian National system.

T. H. Cooper, appointed assistant comptroller, general accounts, commenced his railway career on leaving school in England and spent several years in the civil engineering department of what is now the London, Midland & Scottish of Great Britain. When he came to Canada in 1912 he joined the accounting department of the Grand Trunk (now Canadian National) and in 1918 was appointed assistant to the general auditor. In 1922 he was assigned to special work with the Canadian National preparatory to the amalgamation of the lines now forming the Canadian National system. In 1923, he was appointed assistant to the vice-president of finance of the C. N. R. Later he became general auditor of this road and the Canadian National Steamships.

A. C. Egan, who becomes assistant comptroller, disbursements, entered railroad service in 1901 as an accountant at Winnipeg, with the Canadian Pacific. He became connected with roads now forming part of the Canadian National system in August, 1904, as a clerk in the audit department. In 1908 he was advanced to assistant chief clerk, and shortly thereafter was appointed chief traveling auditor. In 1911, his jurisdiction was extended to include Toronto and he was assigned the position of auditor of agencies. In January, 1919, he was promoted to assistant to the comptroller of the C. N. R. at Toronto, a position he held until December, 1920, when he became general auditor at Toronto. He

served as comptroller at Winnipeg from February, 1923, until his recent appointment as assistant comptroller, disbursements.

W. S. Harrison, appointed assistant comptroller of revenues at Montreal, began his railway service at Mimico, Ont., in 1899 as a lampman and later served as agent at Strathroy, Ont., Mimico, Allandale, Collingwood, Lindsay and Campbellford, between that date and 1908 when he became traveling auditor. He served as assistant chief clerk and chief clerk in the audit office, Montreal, until 1918 when he became assistant to the auditor of revenues. In 1919 Mr. Harrison was appointed auditor of revenues and in 1923 he became general auditor of revenues for the Canadian National system, the position he vacates to become assistant comptroller of revenues.

C. E. Friend

J. B. McLaren

T. H. Cooper

A. C. Egan

W. S. Harrison

F. Horton

Frederick Horton, who has been appointed assistant comptroller of subsidiary companies at Montreal, joined the accounting department of the Canadian National at Detroit in 1920 as auditor, and was appointed comptroller in 1926. From January 1 of this year until his recent appointment, he has served as general auditor at Detroit.

Financial, Legal and Accounting

George W. Lamb has been appointed general auditor of the Atlantic Coast Line, with headquarters at Wilmington, N. C.

John M. Scott, who has been elected secretary of the Louisville & Nashville, with headquarters at Louisville, Ky., has been connected with that road for 19 years. He was born at Louisville on September 7, 1891, and entered railway service at the age of 15 years as an office boy for the principal locating engineer of the L. & N. Later he was advanced through the positions of file clerk, correspondence clerk, stenographer and secretary to the assistant to the president. From 1914 to 1918 Mr. Scott served as secretary to the president and general manager of the Nashville, Chattanooga & St. Louis and during federal control of the railroads he was secretary to the federal manager of the Louisville & Nashville. On March 1, 1920, he was appointed secretary to the president of the L. & N., then being promoted to executive chief clerk to the president and the executive vice-president on June 17, 1927. Mr. Scott's election to secretary became effective on May 15.

John M. Scott

Joseph C. Michael, who has been elected treasurer of the Louisville & Nashville, with headquarters at Louisville, Ky., has been in the service of that company for more than 30 years. He was born on April 1, 1884, and spent his early life in Louisville. Mr. Michael gained his first railway experience on March 26, 1900, as a stenographer in the local freight office of the L. & N. at Louisville. From 1903 to 1918 he served successively as secretary to the chief clerk to the third vice-president, in charge of traffic, stenographer and

general clerk in the purchasing department, secretary to the chief clerk to the president and secretary to the first vice-president. On July 1, 1918, he was appointed chief clerk to the federal manager of the Louisville & Nashville, con-

Joseph C. Michael

tinuing in a similar capacity after the return of the railroads to private control on March 1, 1920, as chief clerk in the executive department. Mr. Michael was elected secretary on May 17, 1923, his election as treasurer taking effect on May 15.

Traffic

Edward Hare, general agent of the freight department of the New York Central at Jacksonville, Fla., has been transferred to Atlanta, Ga.

Ralph B. Rogers, assistant to the passenger traffic manager of the Erie, with headquarters at New York, has been appointed general passenger agent, with the same headquarters.

C. F. Rank, assistant manager of mail and express traffic of the Chicago, Milwaukee, St. Paul & Pacific, has been promoted to manager of mail and express traffic, with headquarters at Chicago, succeeding **N. J. Van Schoyck,** deceased. The position of assistant manager of mail and express traffic has been abolished.

L. R. Nowotny, assistant chief of the tariff bureau of the Wabash, has been promoted to chief of the tariff bureau, with headquarters as before at St. Louis, Mo., succeeding **L. W. Cole,** who has been promoted to assistant general freight agent at St. Louis. Mr. Cole replaces **W. G. Wescoat,** who has been granted a leave of absence because of illness.

The St. Louis Southwestern on June 1 established 14 new traffic agencies, 12 of which are at off-line points. Those who have been promoted to take charge of the new agencies, with the title of general agent, are as follows: **H. T. Rosemyer,** commercial agent, Pitts burgh, Pa., to Akron, Ohio; **R. W. True,** commercial agent, Memphis, Tenn., to Birmingham, Ala.; **J. P. Keyes,** commercial agent, New York, to Boston, Mass.; **W. H. Anthony,** commercial agent, Pittsburgh, to Buffalo, N. Y.; **H. T. Hudson** to Cairo, Ill.; **W. E. Thompson,** commercial agent, Little Rock, Ark., to Chattanooga, Tenn.; **Richard B. Nessum,** commercial agent, Milwaukee, Wis., to Minneapolis, Minn.; **W. O'Donnell,** assistant general agent, New York, to Philadelphia, Pa.; **J. G. Voelkl** to Rochester, N. Y.; **J. F. Marlborough** to Toledo, Ohio and **Norman Lawson,** commercial agent, Fort Worth, Tex., to Washington, D. C. New agencies in charge of commercial agents have been established at Camden, Ark., Evansville, Ind., and Indianapolis. **H. J. Flynn, R. A. Prendergrass** and **J. H. Arnold,** formerly commercial agents at Louisville, Ky., Nashville, Tenn., and Memphis respectively, have been promoted to general agents at those points.

Harry A. Weaver, freight traffic manager of the Kansas City Southern, has been elected vice-president in charge of traffic, with headquarters as before at Kansas City, Mo. He succeeds **James F. Holden,** who retired on January 1. Mr. Weaver was born at Keithsburg, Ill., on June 17, 1873, and entered railway service in 1893 as a clerk in the

Harry A. Weaver

general freight department of the Atchison, Topeka & Santa Fe. In 1898 he entered the service of the Kansas City, Pittsburg & Gulf and in 1903 he was appointed assistant general freight agent of its successor, the Kansas City Southern, at Kansas City. He was promoted to general freight agent at Kansas City in 1920, being further promoted to freight traffic manager on May 1, 1929. Mr. Weaver's election to vice-president became effective on June 1.

C. E. Jefferson has been appointed freight traffic manager of the Canadian Pacific, with headquarters at Montreal, Que., and **H. W. Gillis,** assistant freight traffic manager at Montreal, has been appointed to succeed Mr. Jefferson as assistant freight traffic manager at Winnipeg, Man. **G. Hiam,** assistant general freight agent at Montreal, has been advanced to assistant freight traffic manager, succeeding Mr. Gillis. Mr. Jefferson was born on September 6, 1889, at Boston, Mass. He entered railway service as an office boy in the Canadian Pacific despatch office at Boston, and occupied successively the positions of billing, tracing and tariff and percentage clerk until November, 1911, when he became a tariff clerk on the Boston &

C. E. Jefferson

Maine at Boston. Later he performed the same work at Boston for the Maine Central and the New York, New Haven & Hartford. In March, 1913, he was appointed a percentage clerk on the Canadian Pacific at Montreal, Que., being advanced to assistant general freight agent, with headquarters at the same point, in December, 1915. In June, 1921, Mr. Jefferson was appointed acting general freight agent of the Eastern lines of the C. P. R. He was promoted to general freight agent in December of the same year, with headquarters at Winnipeg, and assistant freight traffic manager in July, 1927, in which capacity he has served until his recent appointment as freight traffic manager.

Operating

John S. Welsh has been appointed assistant to the superintendent of the Hocking division of the Chesapeake & Ohio, with headquarters at Columbus, Ohio.

J. K. Brown, division superintendent of the New York Central, with headquarters at Utica, N. Y., has been appointed assistant to the general superintendent.

Francis Nugent, division engineer of the Iowa division of the Chicago, Rock Island & Pacific at Des Moines, Iowa has been appointed trainmaster on the same division at Des Moines, succeeding **H. C. Higgins,** deceased.

J. M. Haines, superintendent of transportation of the Lehigh Valley, has been appointed general superintendent of transportation and **C. L. Grim,** assistant to superintendent of transportation, has been appointed superintendent car serv-

ice. Both will have headquarters at Bethlehem, Pa.

C. K. Brodhead, who was recently appointed superintendent of the Ontario division of the New York Central, with headquarters at Oswego, N. Y., has been transferred to a similar position on the Adirondack and Ottawa divisions. A sketch of Mr. Brodhead's railway career appeared in the *Railway Age* of February 22, page 499.

J. K. Johnston, assistant general superintendent of the Pennsylvania, with headquarters at Tyrone, Pa., retired from active service on June 1. He was born at Pleasant Unity, Westmoreland County, Pa., on May 8, 1860. Upon graduation from Greensburg Academy, he entered the service of the engineering department of the Pennsylvania in August, 1879, his duties having to do primarily with the location and construction of branch lines in southwestern Pennsylvania. In January, 1887, he was advanced to the position of assistant engineer maintenance of way at Altoona, Pa., and on July 31, 1888, was transferred to the Tyrone division as assistant supervisor. Mr. Johnston was appointed principal assistant engineer at Altoona on November 1, 1902, and was promoted to superintendent, Tyrone division, at Tyrone, in the following year. He was appointed superintendent of the Philadelphia division at Harrisburg, Pa., in October, 1917, returning to the Tyrone division in the same capacity in February, 1918. Upon the absorption of the Tyrone division by the Williamsport and Middle divisions on May 1, 1929, Mr. Johnston became assistant general superintendent of the eastern Pennsylvania division, in which capacity he served until he retired.

George N. Goad, who has served as acting chief of car service of the Canadian National, was appointed chief of car service, effective June 1. He commenced his railway career with the Grand Trunk (now Canadian National), on October 1, 1901, as junior clerk at Toronto and while in the service of this road occupied successively the positions of junior clerk, stenographer and clerk in the office of the division freight agent at Toronto until October 1, 1904. He became connected with the Canadian National on December 17, 1905, as stenographer to third vice-president at Toronto. On March 1, 1907, he was appointed chief clerk to superintendent and general superintendent, and on September 1, 1915, was assigned a similar position in the office of the general manager. In January, 1916, he became inspector of transportation, and in December of that year was appointed terminal trainmaster at Rosedale, Ont. On December 1, 1917, he was promoted to assistant superintendent at Toronto, and a year later he became superintendent, serving in this capacity at Hornepayne and Capreol, Ont., respectively, until November 1, 1926, when he was advanced to superintendent passenger service at Montreal. Since January of this year he has served as acting chief of car service.

Ernest D. Glenn, whose appointment as superintendent of the Richmond division of the Chesapeake & Ohio, with headquarters at Richmond, Va., was announced in the *Railway Age* of May 10, page 1167, was born on May 23, 1886, at Bolling Green, Ky. He commenced his railway career on April 1, 1903, with the Louisville & Nashville and until April 20, 1906, served as stenographer in various offices of the Louisville & Nashville, the Seaboard Air Line, and the Florida East Coast, as assistant ticket agent for the Seaboard Air Line at Atlanta, Ga., as secretary to assistant to the president of that road, and as secretary to the local treasurer of the Cleveland, Cincinnati, Chicago & St. Louis at Cincinnati, Ohio. In April, 1906, he entered the service of the

Ernest D. Glenn

Chesapeake & Ohio as stenographer to superintendent of the Huntington and Green Briar Divisions at Hinton, W. Va. From 1906 to 1912 he served as secretary to the general superintendent, West Virginia general division, and in the latter year he became car distributor, Kanawha Coal district, at Handley, W. Va. From 1913 to 1914 he was chief clerk to general superintendent, Eastern general division, at Clifton Forge, Va. On November 1, 1924, he became trainmaster of the Virginia Air Line and Buckingham sub-division. From March to October, 1926, he held a similar position on the James River sub-division. On October 1, 1926, he was appointed assistant superintendent of the Clifton Forge division, which position he vacated to become superintendent of the Richmond division.

Engineering, Maintenance of Way and Signaling

R. A. Brown, instrumentman on the Illinois division of the Chicago, Rock Island & Pacific, has been promoted to division engineer of the Cedar Rapids-Minnesota division at Cedar Rapids, Iowa, succeeding **W. E. Heimerdinger,** who has been transferred to the Iowa division at Des Moines, Iowa. Mr. Heimerdinger replaces **Francis Nugent,** who has been transferred to the operating department.

Mechanical

H. E. Myers, master mechanic of the Lehigh Valley, has been appointed master car builder, with headquarters at Bethlehem, Pa.

Obituary

C. B. Udell, former treasurer of the Texas lines of the Southern Pacific, with headquarters at Houston, Tex., died in that city on May 26 at the age of 80 years. Mr. Udell served for various periods from 1910 to 1921 as treasurer of the Houston & Texas Central, the Galveston, Harrisburg & San Antonio, the Houston East & West Texas, the Houston & Shreveport and the Texas lines of the Southern Pacific.

William Milbury Greene, retired vice-president and general manager of the Baltimore & Ohio Southwestern (now part of the Baltimore & Ohio), died at his home in Cincinnati, Ohio, on May 31. Mr. Greene, who retired from active duty in 1906, was born at Athens, Ohio, on October 15, 1858. He entered railway service at the age of 14 years as a clerk in the general freight and passenger office of the Columbus & Hocking Valley (now part of the Chesapeake & Ohio), of which his father was president and superintendent. After graduating from Wooster University in 1879, he returned to the C. & H. V. as clerk to the president. From 1882 to 1896 Mr. Greene served successively as secretary and purchasing agent of the Ohio & West Virginia (now part of the Chesapeake & Ohio), assistant to the president, and general manager of the Cleveland, Cincinnati, Chicago & St. Louis, vice-president of the Griffin Wheel Company and general manager of the Cincinnati, Hamilton & Dayton. In 1896 he was appointed general manager of the Baltimore & Ohio at Baltimore, Md., then being appointed vice-president and general manager of the B. & O. S. W. at Cincinnati in 1898, a position he occupied until 1906.

PAINTING GALVANIZED IRON.—A 20-page catalogue dealing with all phases of the painting of galvanized iron has been issued by the New Jersey Zinc Company, New York. The bulletin discusses natural weathering as well as various other methods of pre-treating zinc surfaces preparatory to painting, and also contains a review of the properties of the various paints which are best suited for painting these surfaces.